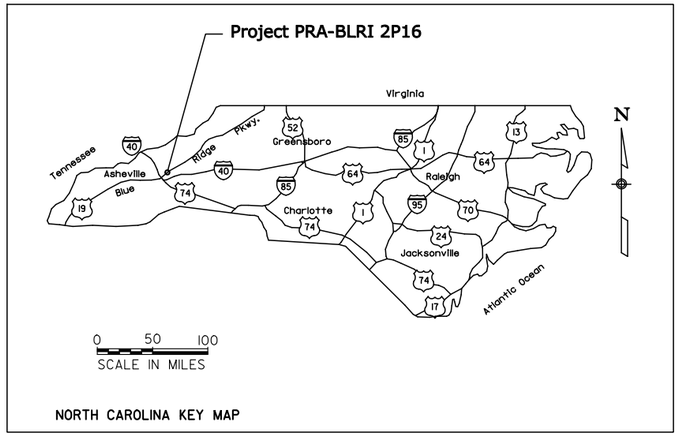
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	A1

U.S. DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

BLUE RIDGE PARKWAY



NORTH CAROLINA KEY MAP

PLANS FOR PROPOSED

PROJECT PRA-BLRI 2P16 SLIDE

RESTORATION AND STABILIZATION OF SLIDE AREA IN THE FAILED RETAINING WALL AT CRAGGY GARDENS NEAR MP 364.72

BUNCOMBE COUNTY, NORTH CAROLINA

INDEX TO SHEETS

DESCRIPTION OF PROJECT

IMPROVEMENT: Restoration and stabilization of the slide area in the failed retaining wall at Craggy Gardens near MP 364.72

PROJECT LENGTH: 530'

ROAD:

	WIDTH	TYPE
SURFACE:	20' +/-	HACP
BASE	28' +/-	Aggregate Base
ROADBED	28' +/-	Existing

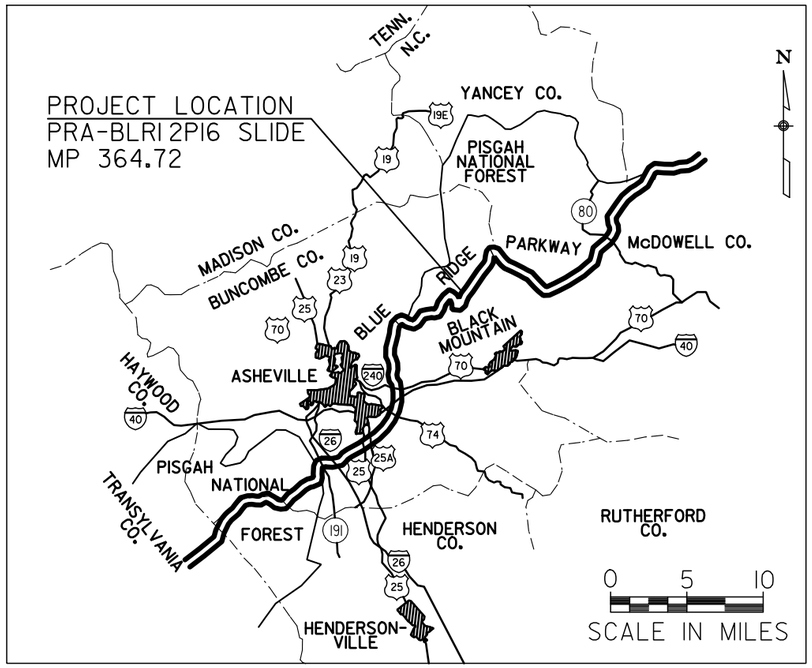
BRIDGE:

DESIGN DESIGNATION:

ADT (2008)	1582
ADT (2028)	2351
D	50/50
%Truck	0%
V (MPH)	45
C/A	None
e(max)	8%

SPECIFICATIONS:

"Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects", FP-03 U.S.Customary Units.



PLANS PREPARED BY

U.S. Department of Transportation
Federal Highway Administration

EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA
MAY, 2008

PROJECT MANAGER	HD MANAGER	LEAD DESIGNER
Tom Shifflett	Jennifer Whelchel	Jonathan Woody

PMIS NO. 141267

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NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	A2

Abutment	Abut.
Aggregate	aggr.
Ahead	AH
Alternate	alt.
Average daily traffic	ADT
Back	BK
Balance point	BP
Bearing	brg.
Begining	beg.
Bench mark	BM
Centerline	
Center to center	cc, c-c or c. to c.
Centers	ctrs.
Clear	clr.
Column	col.
Connection	conn.
Construction joint	Constr. jt.
Continuous	cont.
Corrugated metal pipe	CMP
Culvert	culv.
Curve centeral angle (spiral curve transitions)	Δ_c
Curve total angle (curve delta or deflection)	Δ
Design hourly volume	DHV
Design speed	V
Diagonal	diag.
Diameter	D, dia., or
Diaphragm	diaph.
Distance	dist.
Drawing(s)	dwg(s), or drwg(s)
Drop Inlet	DI
East	E
Edge of pavement	EP or EOP
Elevation	elev.
Elevation with number	El. 94.161 [El. 94.16]
Embankment	emb.
End section	ES
Equation	EQ or eq.
Excavation	exc.
Expansion joint	exp. jt.
Finish	fin.
Flange	flg.
Footing	ftg.
Galvanized	galv.
Gage(gauge)	ga.
Headwall	hdwl.
Hexagon	hex.
High water	HW
Inside diameter	ID
Joint	jt.
Lamination	lam.
Latitude	lat.
Left	lt., Lt. or LT
Length of curve(simple curve)	L
Length of curve (spiral curve transision)	Lc
Length of spiral	Ls
Longitudinal(longitude)	long.
Low water	LW
Mainline	M.L.
Material	matl.
Maximum	max.
Mile[Kilometer] post	M.P[K.P.]
Minimum	min.
Monument	mon.
Mechanically stabilized embankment	MSE
Original groung	OG
Out to out	o. to o.
Outside diameter	OD
On centers	o. c.
Normal crown	NC or NCR
North	N
Pavement	pvmt.
Plate	pl.
Point of compound curve	PCC
Point of curve	PC
Point of curve to spiral	PCS or CS
Point of intersection	PI
Point of spiral to curve	PSC or SC
Point of spiral to reverse spiral	SRS
Point of spiral to tangent	PST or ST
Point of tangent	PT
Point of tangent to spiral	PS or TS
Point on curve	POC
Point on spiral	POS
Point on tangent	POT
Radius	R
Range	R.
Reinforcement (reinforced)	reinf.
Required	reqd.
Right	Rt., rt.or RT
Right-of-way	R/W
Roadway	Rdwy.
Route	Rte.
Section	Sec.
South	S
Spacing, spaces or spaced	spa.
Spiral central angle	s
Standard	std.
Station	Sta.
Stiffener	stiff.
Stringer	stgr.
Structure	struc.
Superelevation rate	e
Symmetrical	sym.
Tangent distance (tangent length)	T
Tangent distance (spiral curve transision)	Ts
Temporary benchmark	TBM
Temporary construction easement	TCE
Thread	thd.
Township	T.
Typical	typ.
Vehicle per hour	vph
Vertical point of intersection	VPI
West	W

NATIONAL BOUNDARY
STATE BOUNDARY
COUNTY BOUNDARY
CITY BOUNDARY
TOWNSHIP or RANGE LINE
SECTION LINE
¼ SECTION LINE
1/16 SECTION LINE
NATIONAL PARK or FOREST BOUNDARY
PROPERTY LINE — P/L
TRAVERSE POINT (Horizontal & Vertical) Top of Triangle Points North — T-45, 2,645.9
TRAVERSE POINT (Horizontal) — T-3
BRASS CAP
STEEL PIN
HUB & TACK
SPOT ELEVATION — 99.9
COORDINATE GRID TICK

	EXISTING	PROPOSED
RIGHT-OF-WAY LINE	R/W	R/W
RIGHT-OF-WAY LINE with MONUMENT	R/W	R/W
	FOUND	PROJECTED
SECTION CORNER	36 31 1 6	36 31 1 6
¼ SECTION CORNER	15 22	15 22
1/16 SECTION		
PROPERTY CORNER		No Symbol
PARCEL NUMBER	No Symbol	400
EASEMENT (Permanent - Construction)	P/E	C/E

ROUTE NUMBERS — 26 INTERSTATE; 25 U.S.; 694 STATE

SLOPE STAKE — TOP OF CUT; TOE OF FILL; TRANSITION
ROADWAY, EXISTING
RAILROAD — SINGLE TRACK; MULTIPLE TRACK
TRAIL
INTERMITTENT DRAINAGE/ SMALL CREEK
SPRING
LARGE CREEK/RIVER
LAKE, POND or RESERVOIR; MARSHLAND

AREA PATTERN
PAVEMENT REMOVAL/ROADWAY OBLITERATION
FULL DEPTH PAVEMENT
SIDEWALK ASPHALT/CONCRETE
MILL AND OVERLAY
OVERLAY

SILT FENCE — SF
DIVERSION BERM — DB
DIVERSION CHANNEL
CHECK DAM
RIPRAP/CULVERT RIPRAP
BORING LOCATION — B-1
TEST PIT — TP-1
NORTH ARROW — N
MATERIAL SOURCE

	EXISTING	PROPOSED
FENCE	X X	XX XX
GATE with FENCE	X X	XX XX
CATTLEGUARD		
GUARDRAIL		
MEDIAN & SIDE (CONCRETE) BARRIER		
SIGNS — POST MOUNTED		
SIGNS — PORTABLE	No Symbol	
RETAINING WALL		wall face
OVERHEAD(POWER POLE) UTILITIES P=Electrical for transmission line E=Electrical for distribution line T=Telephone, E&T=Joint Electrical and Telephone FO=Fibre optics	P	P
SUPPORT POLE with ANCHOR		
TELEPHONE BOOTH or PEDESTAL	TB or TP	TB or TP
STREET LIGHT	or	or
UNDERGROUND UTILITIES G=gas, O=oil, P=power, SA=sanitary sewer, SS=storm sewer, T=telephone, W=water E=electrical, FO=fibre optics	W	W
BRIDGE		
PIPE CULVERT (arrow shows flow)		
PIPE CULVERT with END SECTION		
PIPE CULVERT with HEADWALL		
CULVERT with DROP INLET		
BOX CULVERT		
UNDERDRAIN	UD	UD
BUILDING		
TREELINE; TREE		

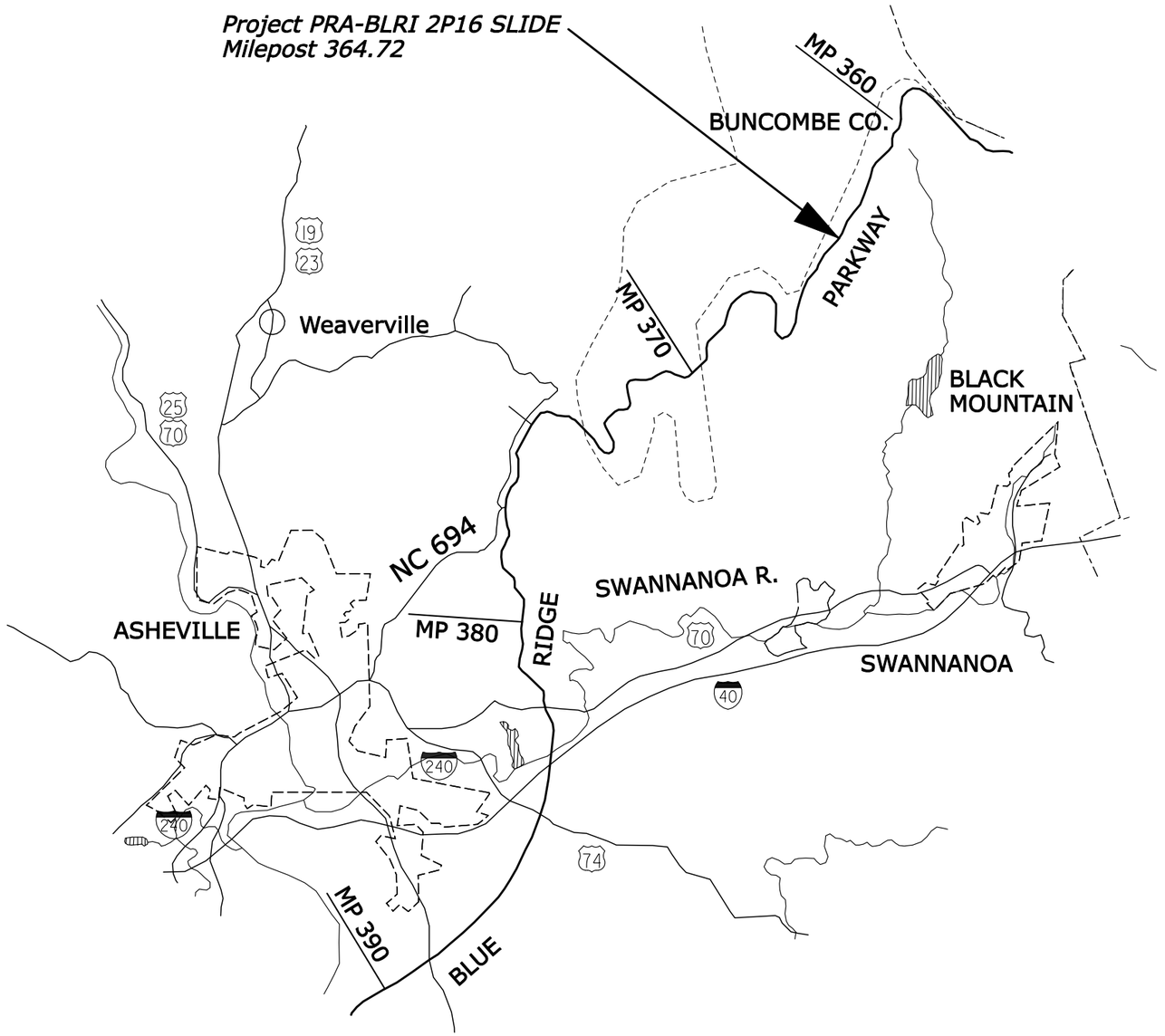
PROJECT SPECIFIC SYMBOLS AND ABBREVIATIONS:-

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

SYMBOLS AND ABBREVIATIONS

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	A3



N

0 2 4
SCALE IN MILES

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

LOCATION MAP

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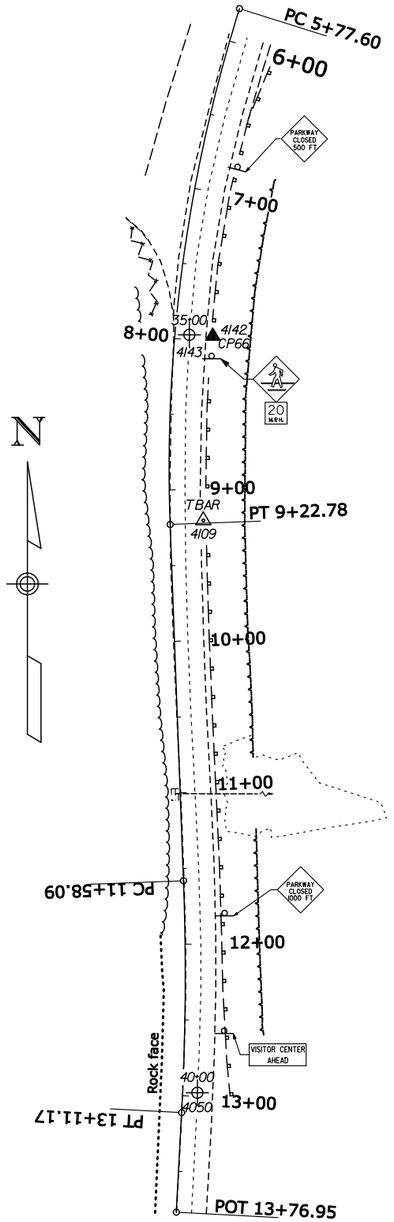
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	A4

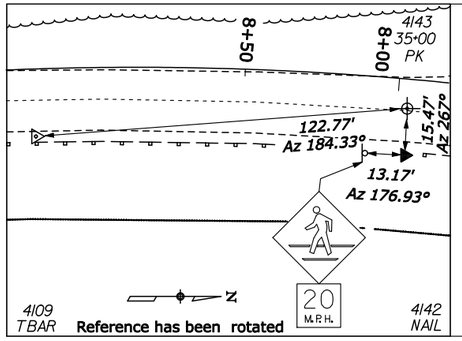


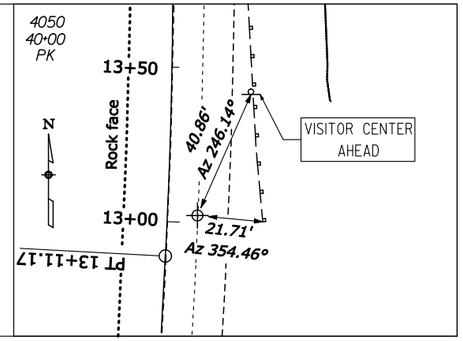
Coordinate System

Coordinate System : US State Plane 1983(Grid)
Zone : North Carolina 3200
Datum : NAD 1983 (Conus)
Geoid Model : GEOID03 (Conus)
Project : blri2p16

Project Control Points

NAME	NORTHING	EASTING	ELEV.	TYPE
4109	726350.603	996709.083	5495.719	TBAR
4205	727167.891	997374.696	5519.602	TBAR
4050	725972.954	996705.184	5491.912	PK
4142	726472.324	996715.295	5495.700	NAIL
4143	726473.129	996699.907	5497.035	PK





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EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

SURVEY INFO SHEET

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SCALE IN FEET

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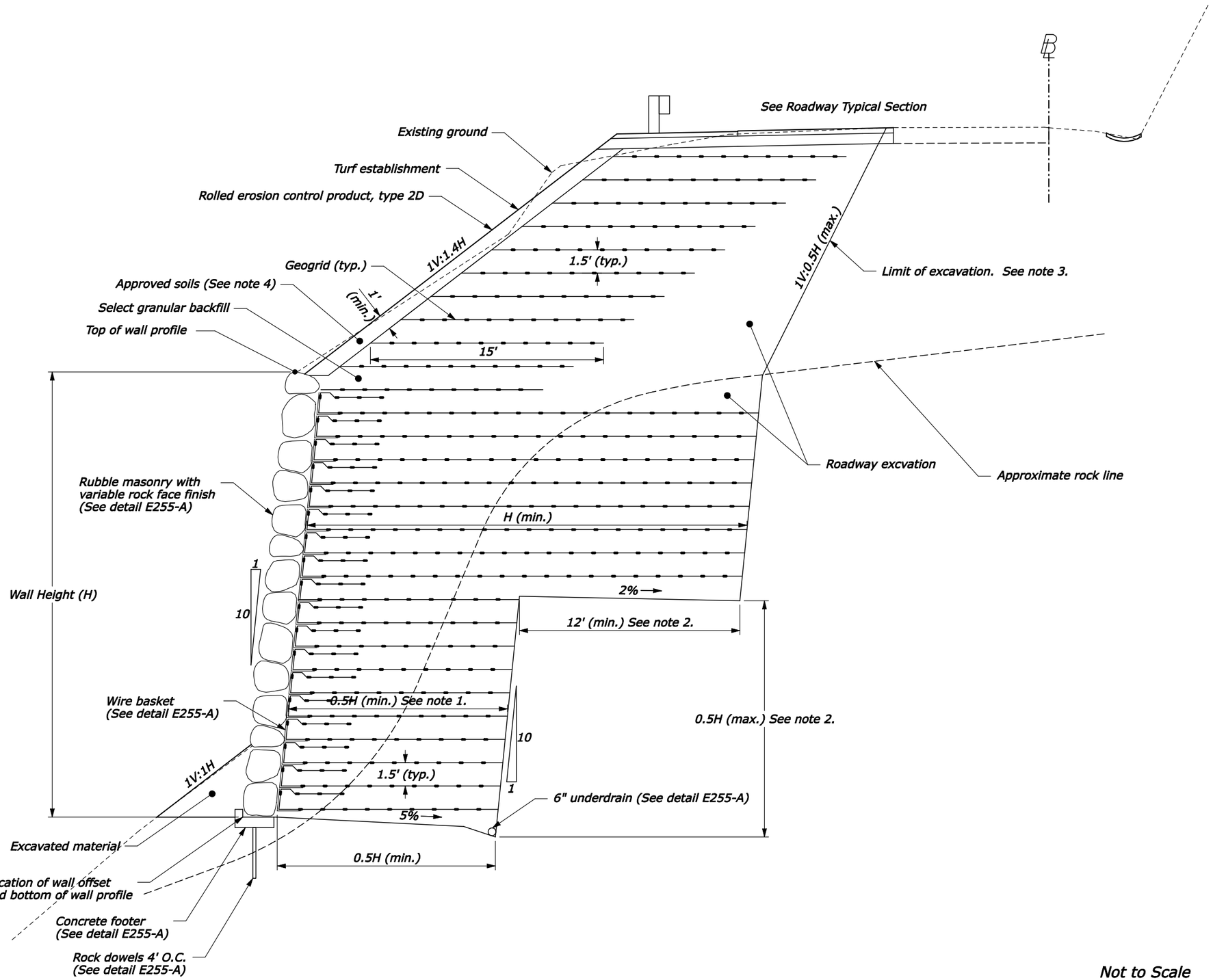
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	B1



Note:

1. *If rock is not encountered, continue to excavate to a maximum geogrid embedment depth of 0.7H.*
2. *Bench height and width may vary to accommodate construction equipment.*
3. *Follow OSHA safety regulations for sloping and stabilizing the sides of excavation.*
4. *Conserve existing soil for reuse .*

Not to Scale

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EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

TYPICAL SECTION WALL RECONSTRUCTION

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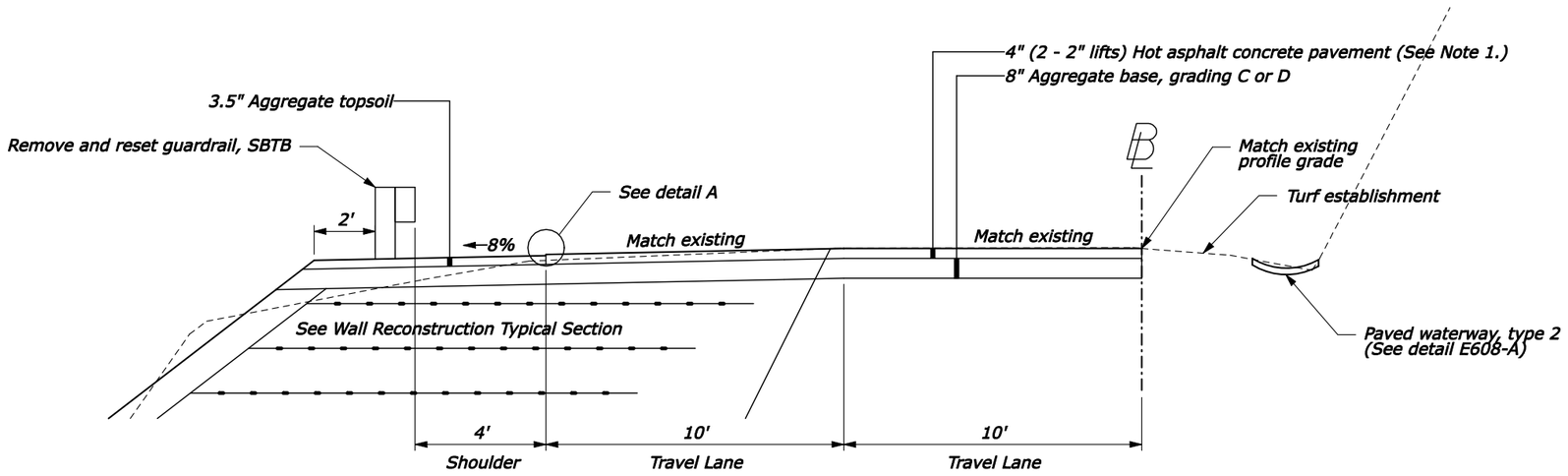
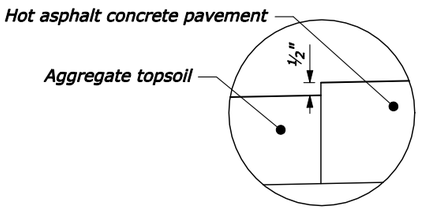
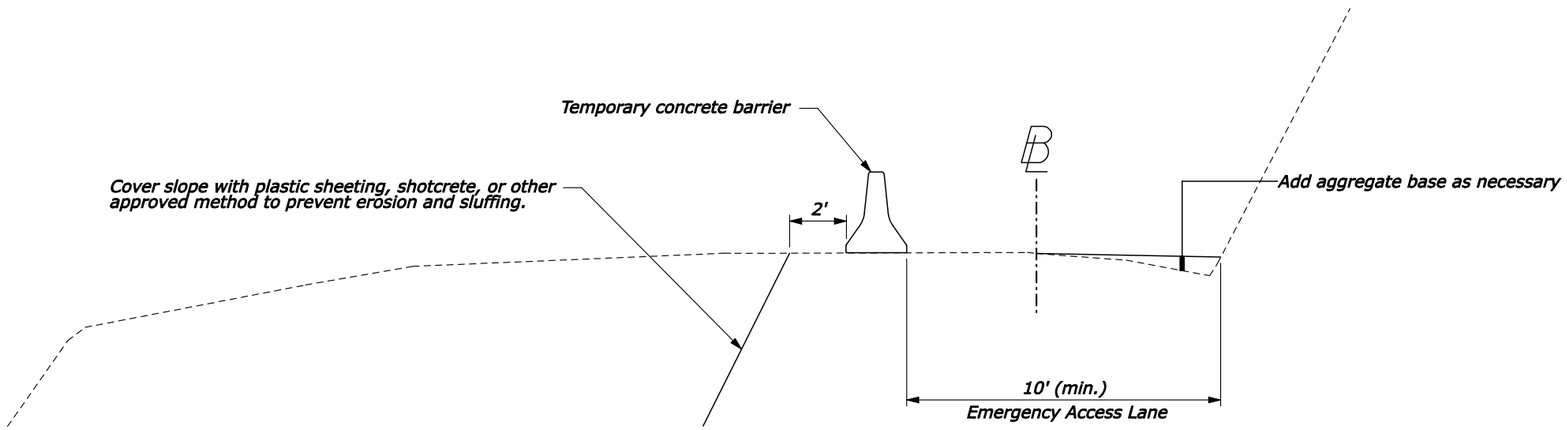
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	B2





Detail A

ROADWAY TYPICAL SECTION



EMERGENCY ACCESS TYPICAL SECTION

Not to Scale

Note:

1. Furnish an asphalt mix conforming to ½" NMSA, 0.3 - <3 ESALs for SACP or Grading B, Class B for Marshall or Hveem

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STERLING, VIRGINIA

BLUE RIDGE PARKWAY

TYPICAL SECTIONS ROADWAY & EMERGENCY ACCESS

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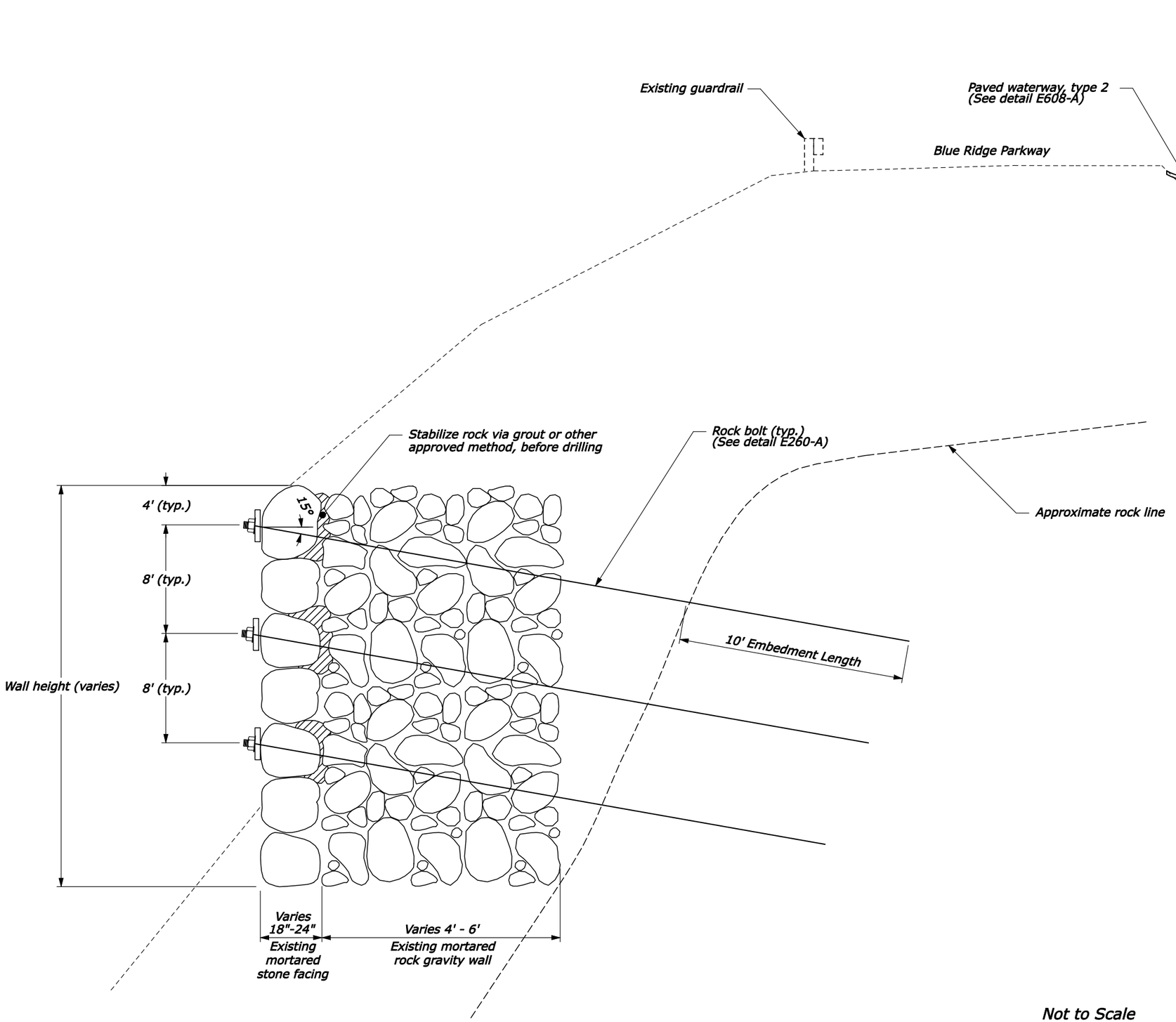
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	B3



Note:

1. Vary the location of rock bolts to place in the center of selected large stones, as directed by the CO.
2. Begin stabilization grouting for rock bolts at the bottom row of rock bolts. Proceed to the next row after grout has hardened.

Not to Scale

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STERLING, VIRGINIA

BLUE RIDGE PARKWAY

TYPICAL SECTION WALL STABILIZATION

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NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	C1

	PLAN SHEET SECTION -------->>		ESTIMATED QUANTITIES	
ITEM	DESCRIPTION	UNIT	PLAN	BID SCHEDULE
15101-0000	MOBILIZATION	LPSM	ALL	ALL
15201-0000	CONSTRUCTION SURVEY AND STAKING	LPSM	ALL	ALL
15401-0000	CONTRACTOR TESTING	LPSM	ALL	ALL
15705-1700	SOIL EROSION CONTROL, FILTER BERM	LNFT	810	850
20101-0000	CLEARING AND GRUBBING	ACRE	0.5	0.6
20301-1400	REMOVAL OF INLET	EACH	1	1
20302-2100	REMOVAL OF PIPE CULVERT	LNFT	64	70
20303-1600	REMOVAL OF PAVEMENT, ASPHALT	SQYD	611	640
20401-0000	ROADWAY EXCAVATION	CUYD	4000	4,400
20703-0000	GEOGRID	SQYD	7661	8,000
25501-1000	MECHANICALLY STABILIZED EARTH WALL, WELDED WIRE FACE	SQFT	2985	3,100
25510-0000	SELECT GRANULAR BACKFILL	CUYD	3399	3,700
26001-0000	ROCK BOLT	LNFT	962	1,100
26101-0000	ROCK DOWEL	LNFT	94	100
27001-0000	GROUT	CUYD	30	30
30101-4000	AGGREGATE BASE GRADING C OR D	TON	333	370
30502-0600	AGGREGATE-TOPSOIL COURSE, 3 1/2-INCH DEPTH	SQYD	180	190
40301-0000	HOT ASPHALT CONCRETE PAVEMENT	TON	109	120
60101-0000	CONCRETE	CUYD	6	6
60501-0000	STANDARD UNDERDRAIN SYSTEM (6")	LNFT	160	160
60801-0200	PAVED WATERWAY, TYPE 2	SQYD	177	190
61708-1000	REMOVE AND RESET, GUARDRAIL	LNFT	225	240
62001-1500	RUBBLE MASONRY, ROCK FACE FINISH	CUYD	221	240
62407-0000	PLACING CONSERVED TOPSOIL AND APPROVED SOILS	CUYD	390	410
62501-0000	TURF ESTABLISHMENT	ACRE	0.78	0.85
62901-0800	ROLLED EROSION CONTROL PRODUCT, TYPE 2.D	SQYD	1197	1,300
63401-1500	PAVEMENT MARKINGS, TYPE H, SOLID	LNFT	450	470
63501-0000	TEMPORARY TRAFFIC CONTROL , MAINTAINING DETOUR	LPSM	ALL	ALL
63501-2000	TEMPORARY TRAFFIC CONTROL, TRAFFIC SIGNAL SYSTEM ONE LANE CLOSURE	LPSM	ALL	ALL
63503-0500	TEMPORARY TRAFFIC CONTROL, MOVING CONCRETE BARRIER	LNFT	325	325
63701-0000	FIELD OFFICE	EACH	1	1

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

TABULATION OF QUANTITIES

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	C2

Wall Schedule

STATIONS	Average Wall Height	Min. Embedment Length		Pay Item 20703-0000	Pay Item 25501-1000	Pay Item 25510-0000	Pay Item 26101-0000	Pay Item 27001-0000	Pay Item 60101-0000	Pay Item 60501-0000	Pay Item 62001-1500	REMARKS
		Lower Bench	Upper Bench	Geogrid	MSE Wall, Welded Wire Face	Select Granular Backfill	Rock Dowel	Grout	Concrete	Standard Underdrain System (6")	Rubble Masonry, Rock Face Finish	
	ft	ft	ft	sqyd	sqft	cuyd	lnft	cuyd	cuyd	lnft	cuyd	
10+30 to 10+70	Varies	Varies	Varies	1362	410	557	0	4.4	0.0	40	30	Taper MSE wall into existing wall.
10+70 to 11+00	24.5	12.0	24.5	1767	750	849	40	0.0	2.3	30	56	
11+00 to 11+10	27.0	13.5	27.0	682	275	312	14	0.0	0.9	10	20	
11+10 to 11+20	29.0	14.5	29.0	712	290	336	14	0.0	0.9	10	22	
11+20 to 11+40	30.0	15.0	30.0	1577	610	703	26	0.0	1.4	20	45	
11+40 to 11+90	Varies	Varies	Varies	1954	650	642	0	5.6	0.0	50	48	Taper MSE wall into existing wall.
			Subtotal	8054	2985	3399	94	10.0	5.5	160	221	
			Rounded Total	8500	3100	3700	100	--	6.0	160	240	

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FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

WALL SCHEDULE

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	C3

ROCK BOLT SUMMARY

STATION	Elevation	Pay Item 26001-0000 Rock Bolt	Pay Item 27001-0000 Grout	REMARKS
	ft	lnft	cuyd	
North End				
9+54	5,476	25	0.3	
9+54	5,470	23	0.3	
9+62	5,476	25	0.3	
9+70	5,476	25	0.3	
9+78	5,476	25	0.3	
9+86	5,476	25	0.3	
9+94	5,476	25	0.3	
10+02	5,476	25	0.3	
10+10	5,476	25	0.3	
10+18	5,476	25	0.3	
10+18	5,470	23	0.3	
10+26	5,476	25	0.3	
10+26	5,468	22	0.3	
10+34	5,472	24	0.3	
10+34	5,468	22	0.3	
10+42	5,468	22	0.3	
10+50	5,464	21	0.3	
Subtotal		407	5.1	

ROCK BOLT SUMMARY

STATION	Elevation	Pay Item 26001-0000 Rock Bolt	Pay Item 27001-0000 Grout	REMARKS
	ft	lnft	cuyd	
South End				
11+59	5,458	17	0.3	
11+67	5,462	20	0.3	
11+67	5,458	17	0.3	
11+75	5,466	22	0.3	
11+75	5,458	17	0.3	
11+83	5,470	23	0.3	
11+83	5,466	22	0.3	
11+83	5,458	17	0.3	
11+91	5,470	23	0.3	
11+91	5466	22	0.3	
11+91	5458	17	0.3	
11+99	5474	24	0.3	
11+99	5466	22	0.3	
11+99	5460	19	0.3	
12+07	5474	24	0.3	
12+07	5466	22	0.3	
12+07	5460	19	0.3	
12+15	5474	24	0.3	
12+15	5466	22	0.3	
12+23	5474	24	0.3	
12+23	5466	22	0.3	
12+31	5474	24	0.3	
12+39	5474	24	0.3	
12+39	5468	22	0.3	
12+47	5474	24	0.3	
Subtotal		533	7.5	
Total		1,000	--	

Note:

Rock bolt length and grout quantity are assumed.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

ROCK BOLT SCHEDULE

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NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	C4

CONSTRUCTION SIGNS

Detail No.	MUTCD NO.	SIGN TEXT	PANEL SIZE WIDTH (in)	PANEL SIZE HEIGHT (in)	PANEL SIZE AREA (sqft)	COLOR COMBINATION	QUANTITY	TOTAL SIGN AREA Sqft	SUPPORT ft	REMARKS
635-9A	G20-2	END ROAD WORK	36	18	4.50	Black on Orange	2	9	20	
635-9A	W1-4	CURVE (RIGHT)	30	30	6.25	Black on Orange	1	6	10	
635-9A	W20-1	ROAD WORK AHEAD	36	36	9.00	Black on Orange	2	18	20	Mount with Type B Warning Light (Optional)
635-9A	W20-4	ONE LANE ROAD AHEAD	36	36	9.00	Black on Orange	2	18	20	Mount with Type B Warning Light (Optional)
635-9A	W13-1	XX MPH	18	18	2.25	Black on Orange	2	5	20	Mount with sign W20-4
635-9A	W3-3	Signal Ahead (Symbol)	36	36	9.00	Black on Orange	2	18	20	
635-9A	R10-6	STOP HERE ON RED	24	36	6.00	Black on White	2	12	20	
Subtotal this Sheet					46.0		13	85.8	130	
Rounded Total					*		*	90	*	

* For information only

Notes:

1. Construct and erect all signs in accordance with the Manual on Uniform Traffic Control Devices (MUTCD), latest edition.

2. Signs shown are paid for under item 63501-2000, Temporary Traffic Control, Traffic Signal System One Lane Closure.

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STERLING, VIRGINIA

BLUE RIDGE PARKWAY

CONSTRUCTION SIGN SCHEDULE

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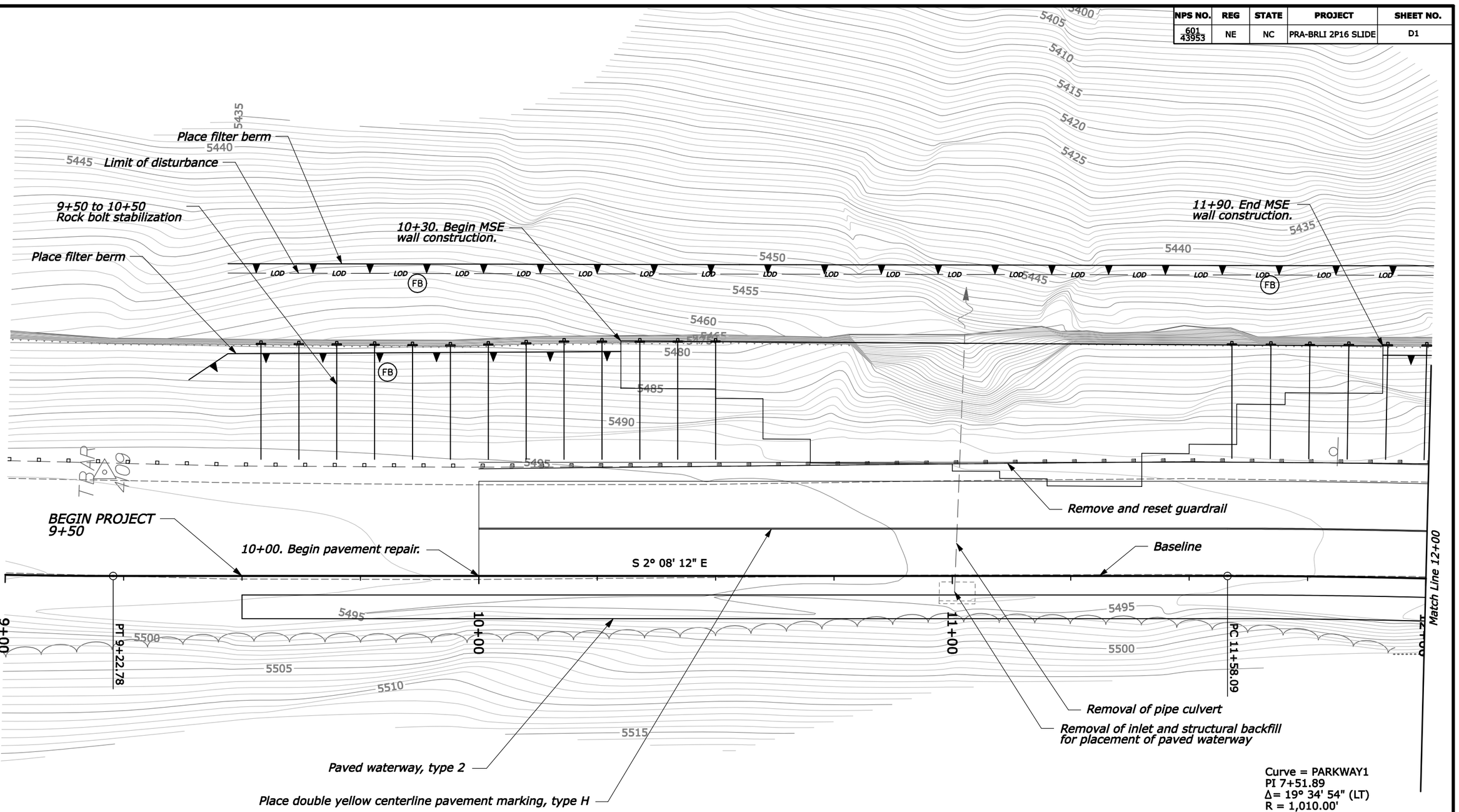
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	D1



Curve = PARKWAY1
PI 7+51.89
Δ= 19° 34' 54" (LT)
R = 1,010.00'
T = 174.29'
L = 345.18'

N

Note:

Centerline was wheel stationed from 33+00 to 40+00 for project BLRI 2P14. This project is stationed along the right edge of pavement from 7+00 to 13+00.

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STERLING, VIRGINIA

BLUE RIDGE PARKWAY

PLAN VIEW

9+00 to 12+00

0 10 20
SCALE IN FEET

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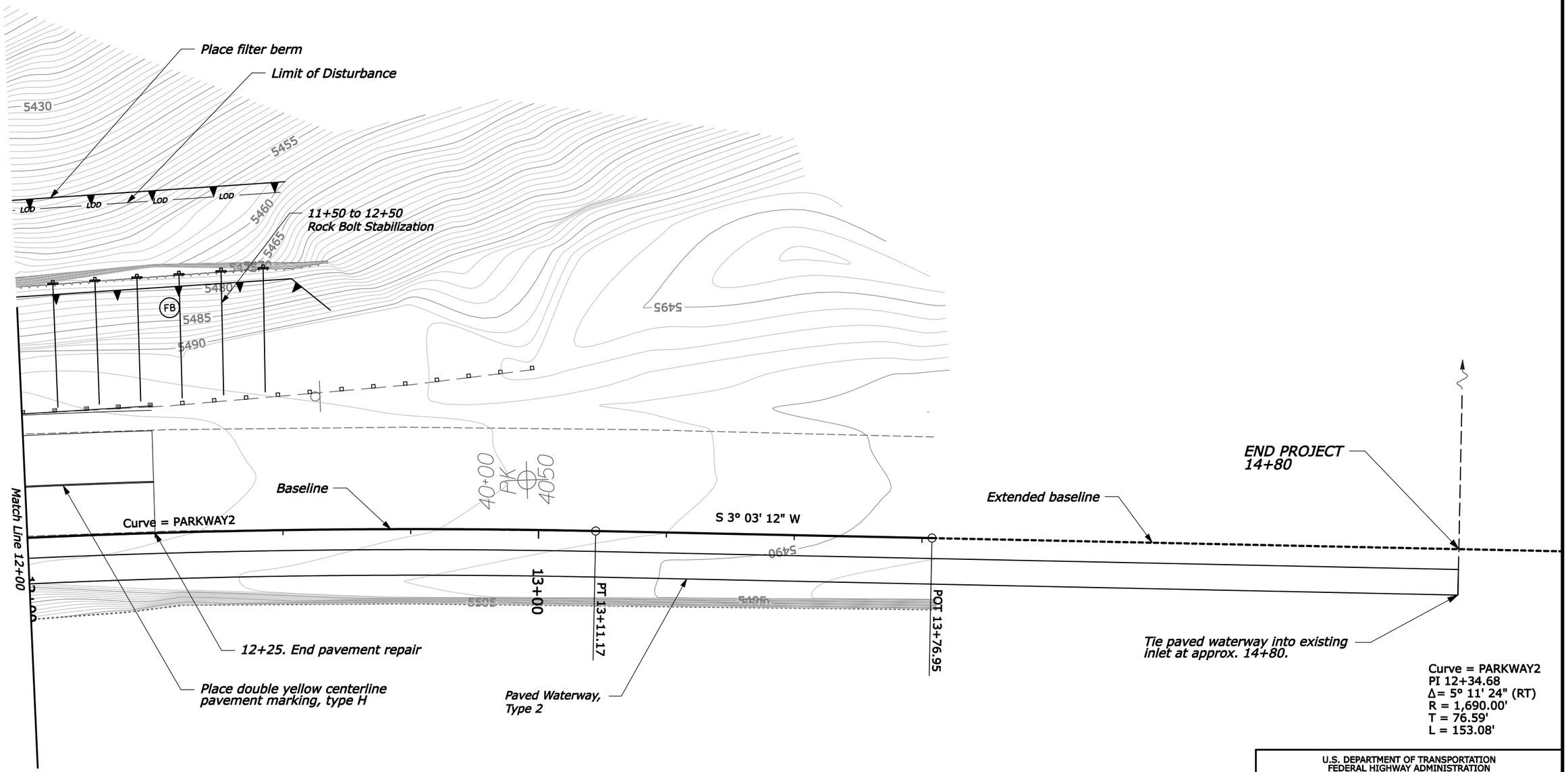
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 ~~43953~~	NE	NC	PRA-BRLI 2P16 SLIDE	D2



Curve = PARKWAY2
PI 12+34.68
Δ= 5° 11' 24" (RT)
R = 1,690.00'
T = 76.59'
L = 153.08'

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BLUE RIDGE PARKWAY

PLAN VIEW

12+00 to 15+00

0 10 20
SCALE IN FEET

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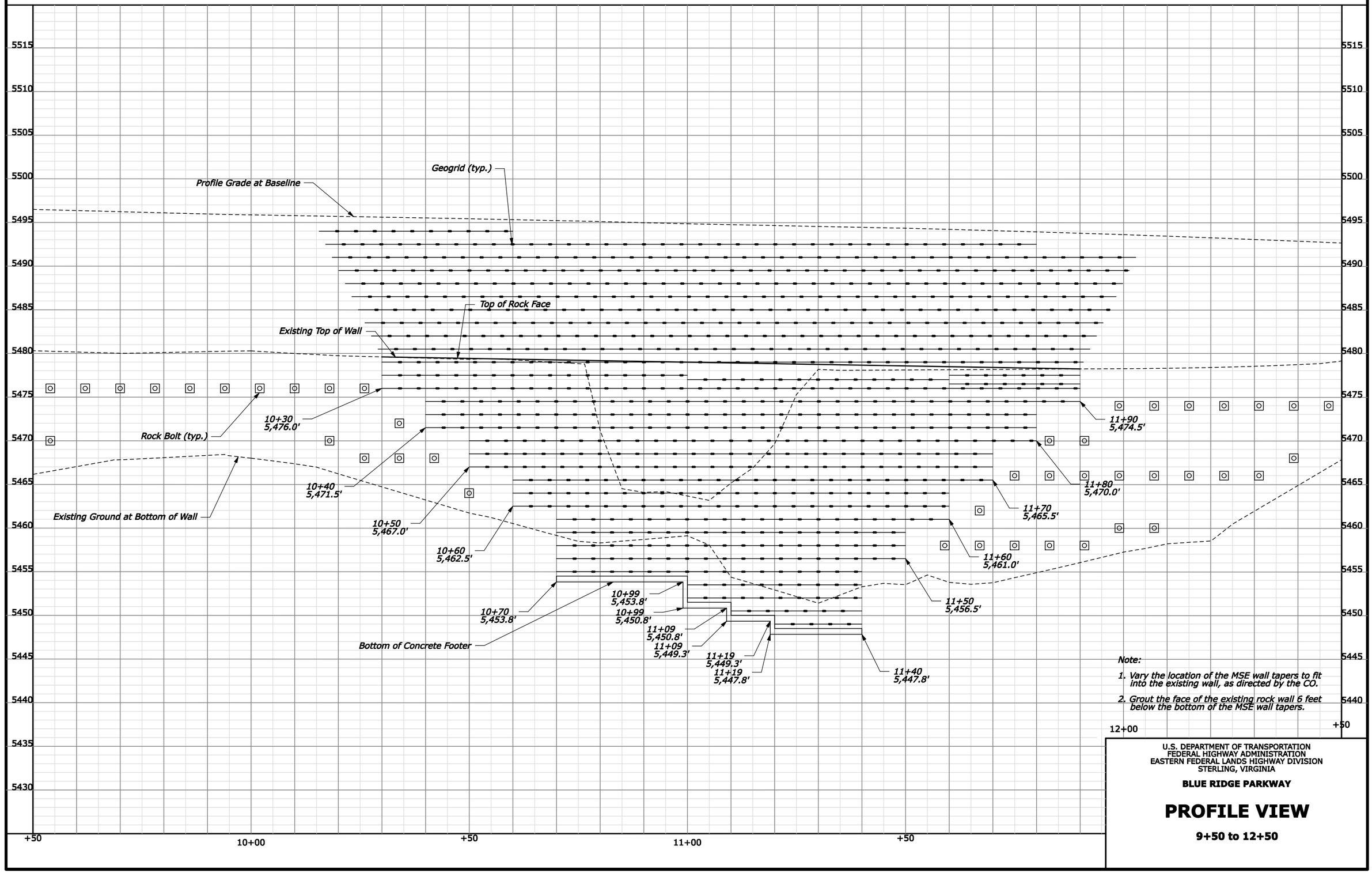
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	D3



Note:

1. *Vary the location of the MSE wall tapers to fit into the existing wall, as directed by the CO.*
2. *Grout the face of the existing rock wall 6 feet below the bottom of the MSE wall tapers.*

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BLUE RIDGE PARKWAY

PROFILE VIEW

9+50 to 12+50

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NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	K1

Construction Area Access

Recommended access for all repairs is from behind the wall. However, access will be allowed from the north end of the wall. See Section 108. Follow OSHA safety regulations for sloping the sides of excavations and using work platforms.

Access Restrictions

From Behind the Wall:
1) Maintain one lane of traffic for emergency vehicle access at all times. See Emergency Access Typical Section.

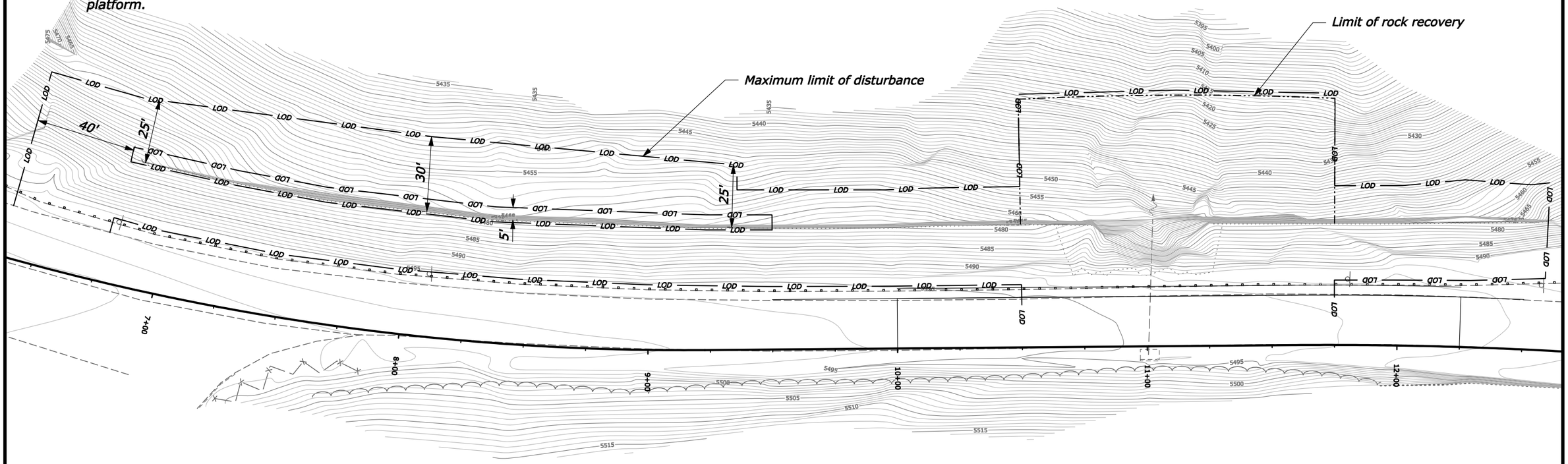
From the North:
1) The access route must be a minimum of five feet from the front of the existing wall in order to protect the wall and foundation.
2) Ground access is available for only the first 245' measured from the north end of the existing retaining wall which is located at approximate baseline station 7+75, left. An elevated temporary work platform will be necessary to complete the slide access. All temporary works must meet the requirements of section 562.
3) Clear vegetation to construct an elevated temporary work platform by cutting vegetation according to subsection 201.03. No grubbing will be allowed below the temporary elevated work platform.

Construction Sequence

The stabilization of the existing wall from station 9+50 to 10+50 and 11+75 to 12+50 must be completed first. The following construction sequence is recommended but other MSE wall construction sequences will be allowed (see Section 155):

Recommended MSE Wall Construction Sequence:

1) Recover stones that have slid downslope.
2) Remove and stockpile existing stone wall facing and approved interior stones within the limits of the MSE wall.
3) Excavate benches for MSE wall construction.
4) Place rock dowels and concrete footers.
5) Construct 2 lifts of the MSE wall.
6) Place stone masonry facing to the top of the lifts.
7) Repeat steps 5 and 6 until wall construction is complete.
8) Repair slope above wall and reconstruct the northbound lane of the Parkway.



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STERLING, VIRGINIA

BLUE RIDGE PARKWAY

SITE ACCESS PLAN

0 20 40
SCALE IN FEET

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NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	MI

EROSION CONTROL NARRATIVE

DESCRIPTION OF PROJECT

Project PRA-BLRI 2P16 consists of MSE wall reconstruction and stabilization and ditch improvements on the Blue Ridge Parkway. The total disturbed area is 0.25 acres. The receiving body of water is the Asheville Watershed.

GENERAL GUIDELINES

The Erosion control Plan/Location (ECP) is a guideline for preventing erosion and controlling sediment. The work consists of applying measures throughout the life of the project to control erosion and to minimize the sedimentation of rivers, streams, and impoundments such as lakes, reservoirs, bays, and coastal waters. The measures consist of stabilization and structural practices, stormwater controls, and other miscellaneous pollution prevention controls. Soil erosion control and turf establishment measures are also defined and outlined in the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03, (English) and the Special Contract Requirements.

Coordinate the installation, use, and removal of erosion and sediment control measures with roadway construction activities to ensure economical, effective, and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds.

Install all erosion and sediment control devices as shown in the plans or as directed by the Contracting Officer (CO). Do not modify the type, size or location of any control or practice without approval from the CO.

Inspect all erosion and sediment control devices every seven calendar days and within 24 hours after any storm event of more than 3/8 of an inch in precipitation in a 24 hour period. Repair as needed or as directed by the CO. Clean all sediment control devices (filter berm, inlet protectors, etc.) when they become half full of sediment or as directed by the CO. Dispose of the sediment by spreading it on site or disposing of it legally outside park boundaries.

Preventing initial soil erosion is much more effective than trying to control eroded sediment. Therefore, stabilize all disturbed areas as soon as practical, but not more than 14 days after construction activity has temporarily or permanently ceased. Stabilization may be in the form of paved waterways, rock riprap and/or turf establishment. Construct temporary erosion controls in incremental stages as construction proceeds.

Attempt to control only the sediment-laden runoff generated by the project site. Separate and route clean, offsite runoff through the project using culverts.

Do not drive construction equipment across flowing waterways.

Do not allow construction vehicles to track sediment outside the project limits.

Do not allow any construction equipment to access or operate on the downslope side of perimeter control measures.

In general, preserve existing vegetation, trees, and shrubs. Install special vegetation protection measures as directed by the CO.

TEMPORARY EROSION AND SEDIMENT CONTROL

PHASE I (ESTABLISH PERIMETER CONTROLS)

During mobilization, construct perimeter controls to ensure that sediment does not leave the project site. Use filter berms as a perimeter control as indicated in the plans.

PHASE II (INTERMEDIATE CONTROLS)

Obtain the CO's approval before installing any controls not specified in the plans. The CO may direct the Contractor to install certain controls in order to forestall or mitigate potential or existing erosion problems.

Apply temporary turf establishment on uncompleted disturbed areas that will remain exposed for more than 14 calendar days or as directed by the CO.

As soon as practical, but not to exceed 14 calendar days, apply permanent turf establishement to the finished slopes and ditches according to Section 625.

PERMANENT EROSION AND SEDIMENT CONTROL

PHASE III (FINAL CONTROLS/STABILIZATION)

After completion of construction, perform the following as directed by the CO:

Where necessary, replace eroded topsoil and reapply permanent turf establishment to disturbed areas where vegetation has not been established.

Remove all fill slope perimeter filter berms only after the embankment slopes and toe of fill have been stabilized.

Inspect, clean, and repair all culvert outlet protection.

Remove inlet protection only after all upslope areas are stabilized and vegetation is well established.

Remove all other perimeter controls when directed by the CO.

Stabilize all areas which are disturbed due to the removal of sediment control devices.

SPECIAL PROJECT CONSIDERATIONS

This project is located in the Asheville Watershed. Do not store fuel within the limits of the watershed. No construction generated runoff shall leave the job site. Sanitation facilities shall be regularly and properly maintained and secured against turnover.

U.S. DEPARTMENT OF TRANSPORTATION
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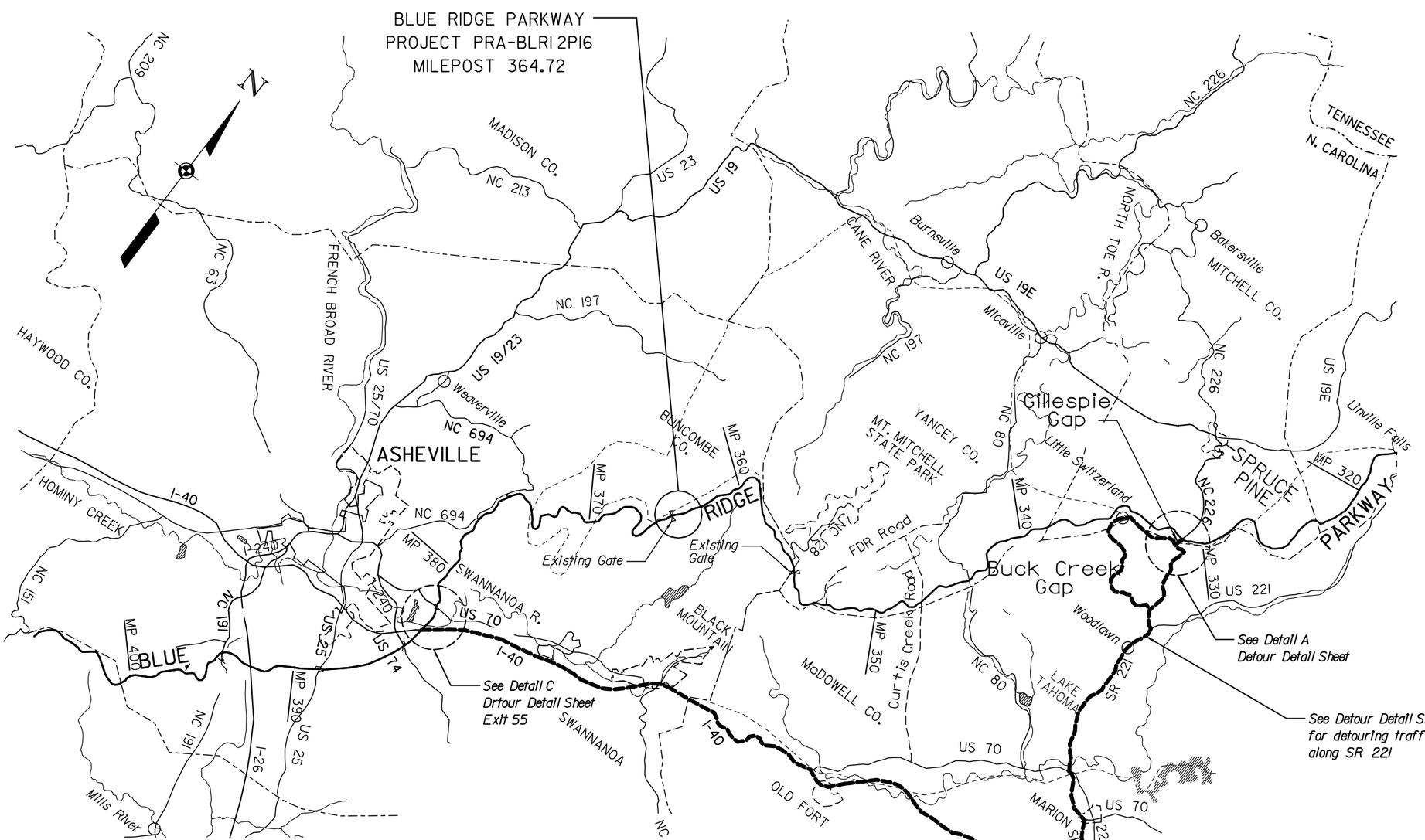
STERLING, VIRGINIA

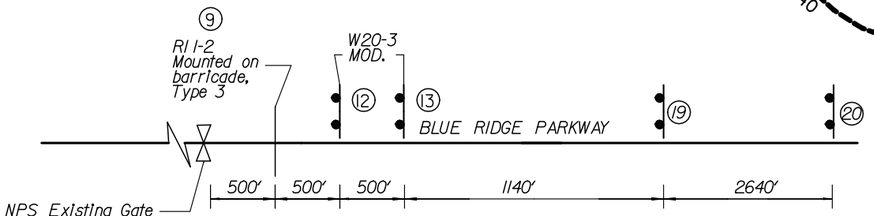
BLUE RIDGE PARKWAY

EROSION CONTROL NARRATIVE

$$$$DATE$$$$ $TIME$ $$$$DGN$$$

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	N1





Typical Road Closure Detail
North and South of MP364.72

⑨ ROAD CLOSED — RII-2

⑬ PARKWAY CLOSED 1000 FT — W20-3 MOD.

⑫ PARKWAY CLOSED 500 FT — W20-3 MOD.

⑲ PARKWAY CLOSED ½ MILE AHEAD — SPECIAL

⑳ PARKWAY CLOSED 1 MILE AHEAD — SPECIAL

LEGEND:

- Warning Light, Type A
- Detour Route
- Signs
- Existing Gate
- (1) Sign number
- M4-9M Sign text number
- Construction flags

Note:

1. Maintain existing construction signing shown to close the Blue Ridge Parkway to traffic until April 1.
2. Cover conflicting signs as directed by the CO.

0 5 10
SCALE IN MILES

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
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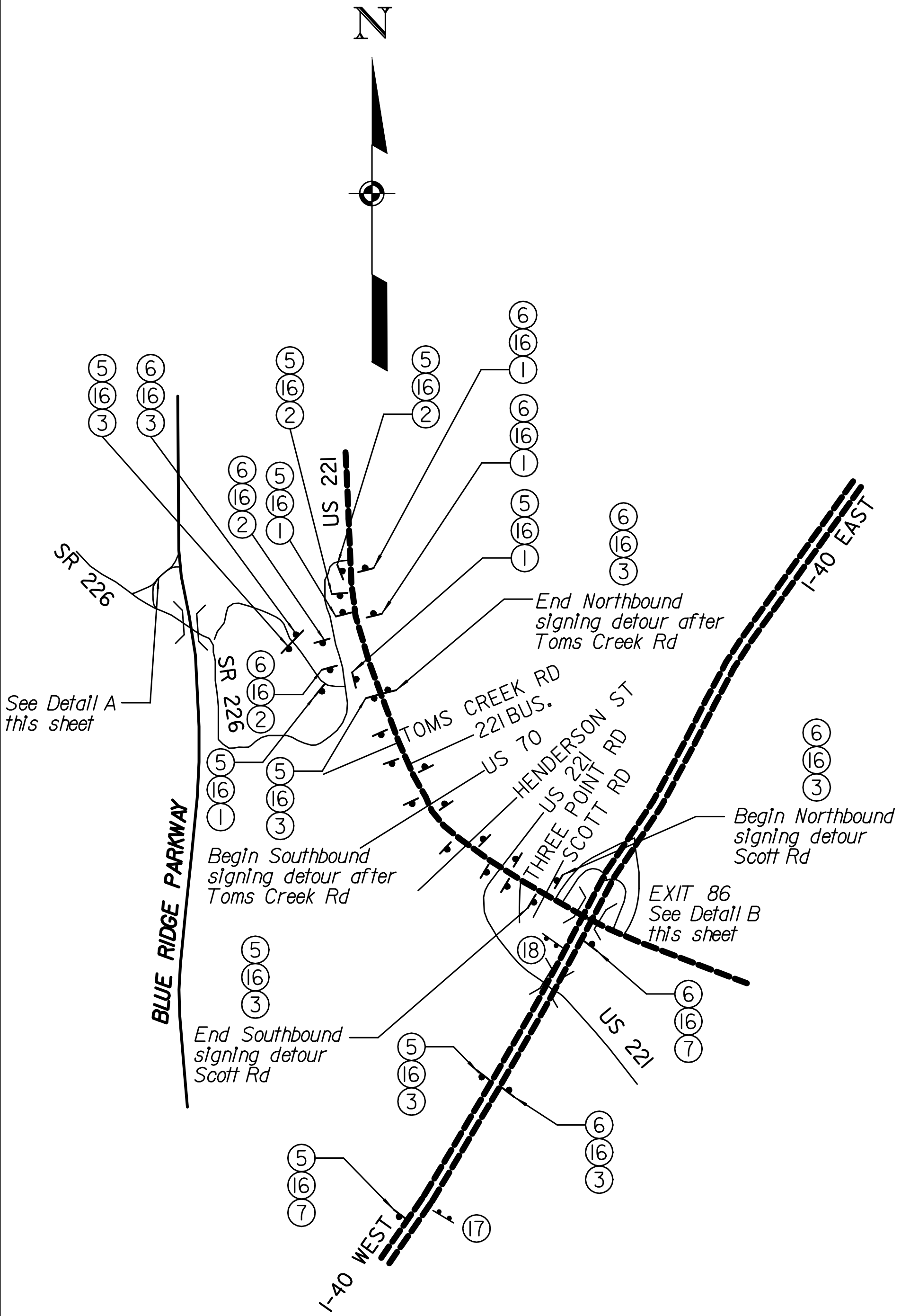
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

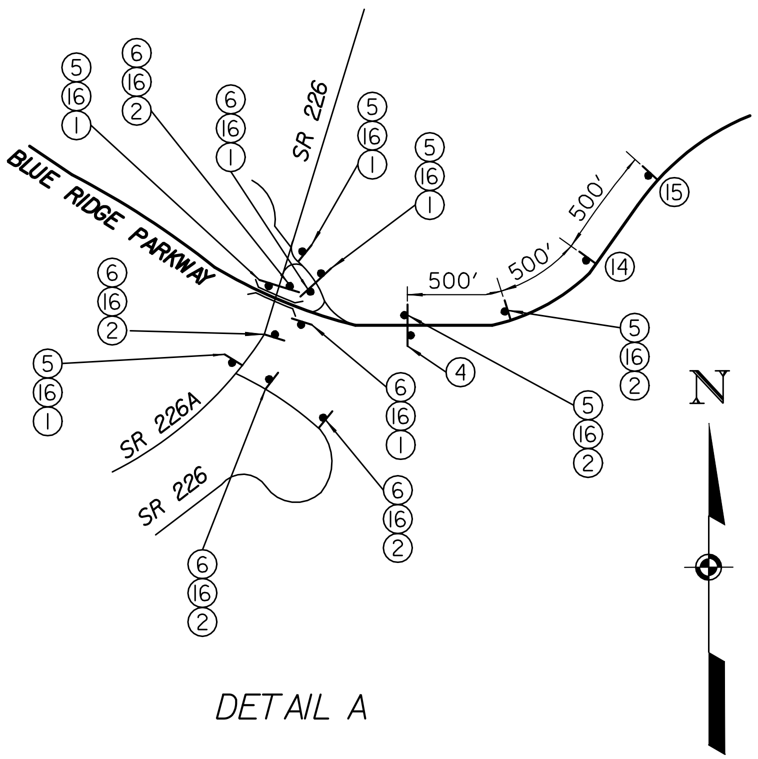
DETOUR PLAN

$$$$DATE$$$$ $TIME$ $$$$DGN$$$$

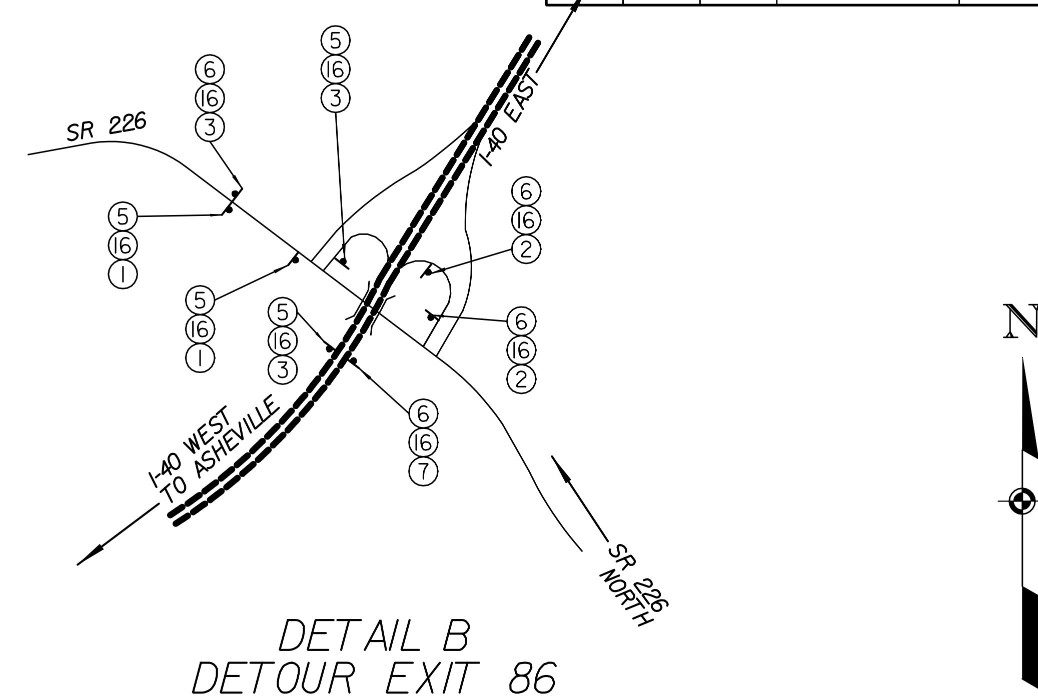
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	N2



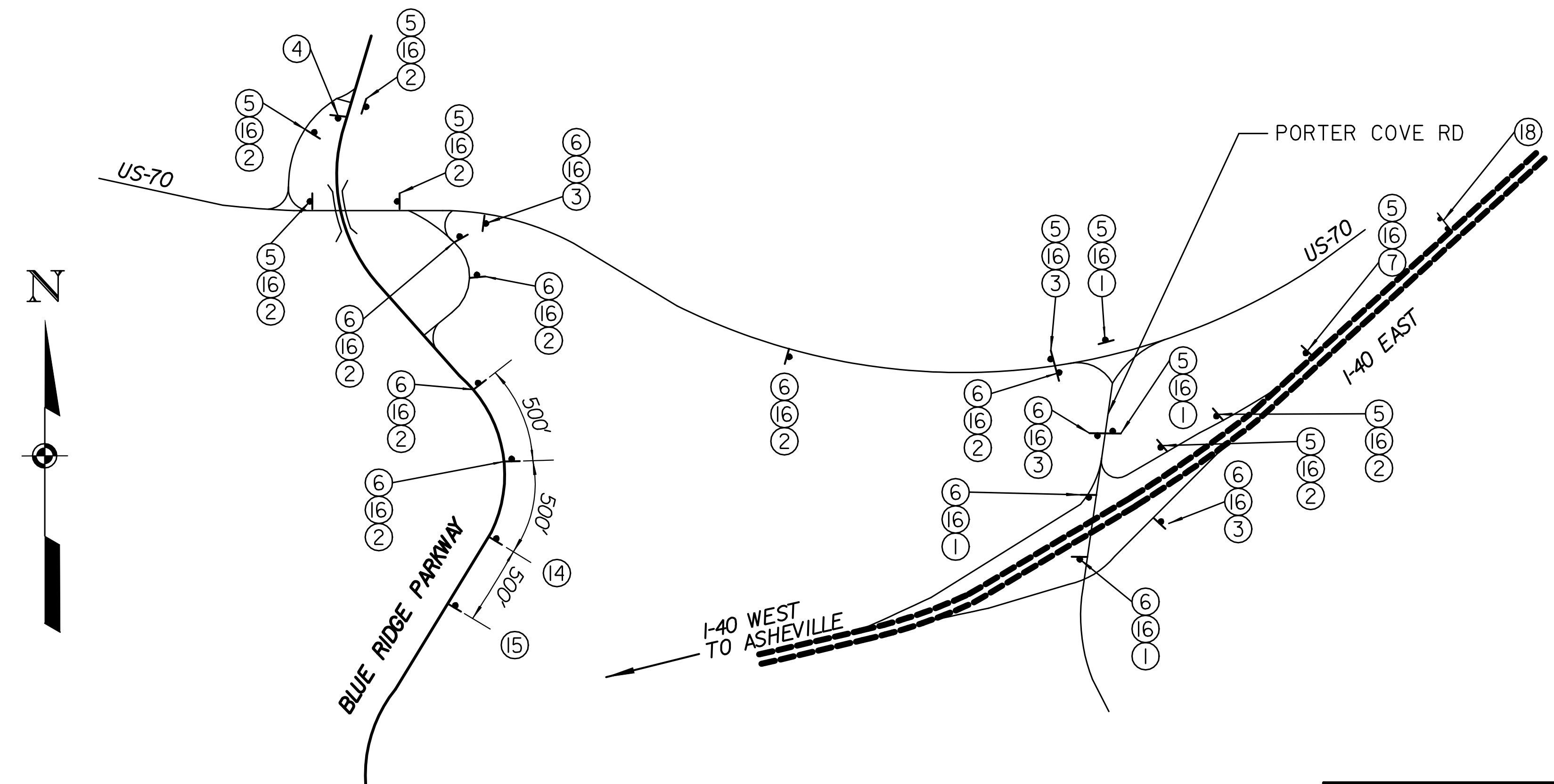
DETAIL
GENERAL DETOUR ROUTE
FOR US 221 AND I-40 AT EXIT 86



DETAIL A



DETAIL B
DETOUR EXIT 86



DETAIL C
DETOUR EXIT 55

Not to Scale

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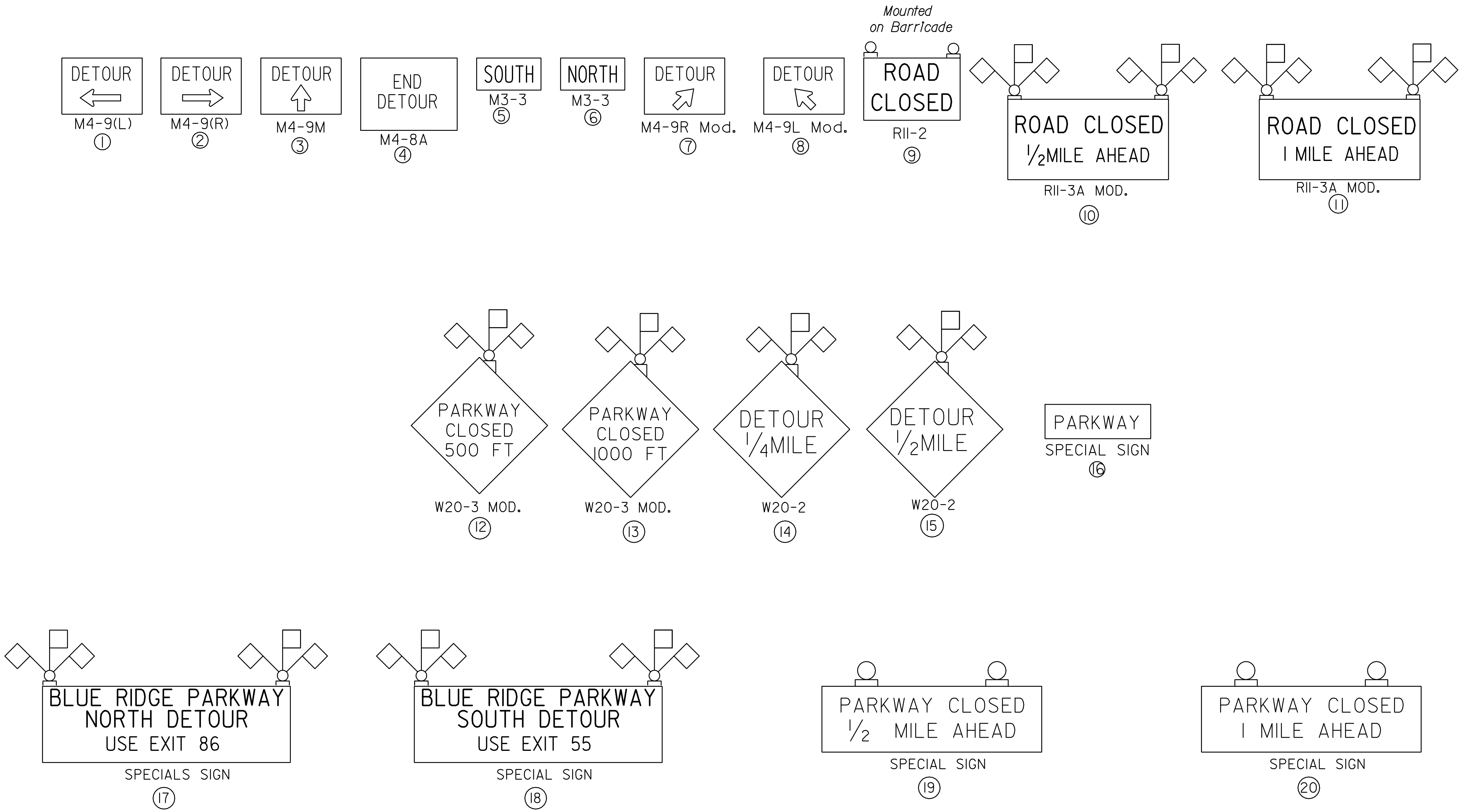
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

DETOUR DETAILS

$$$$DATE$$$$ $TIME$ $$$$DGN$$

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	N3



$$$$DGN$$ $TIME$ $$$$DATE$$$$

Not to Scale

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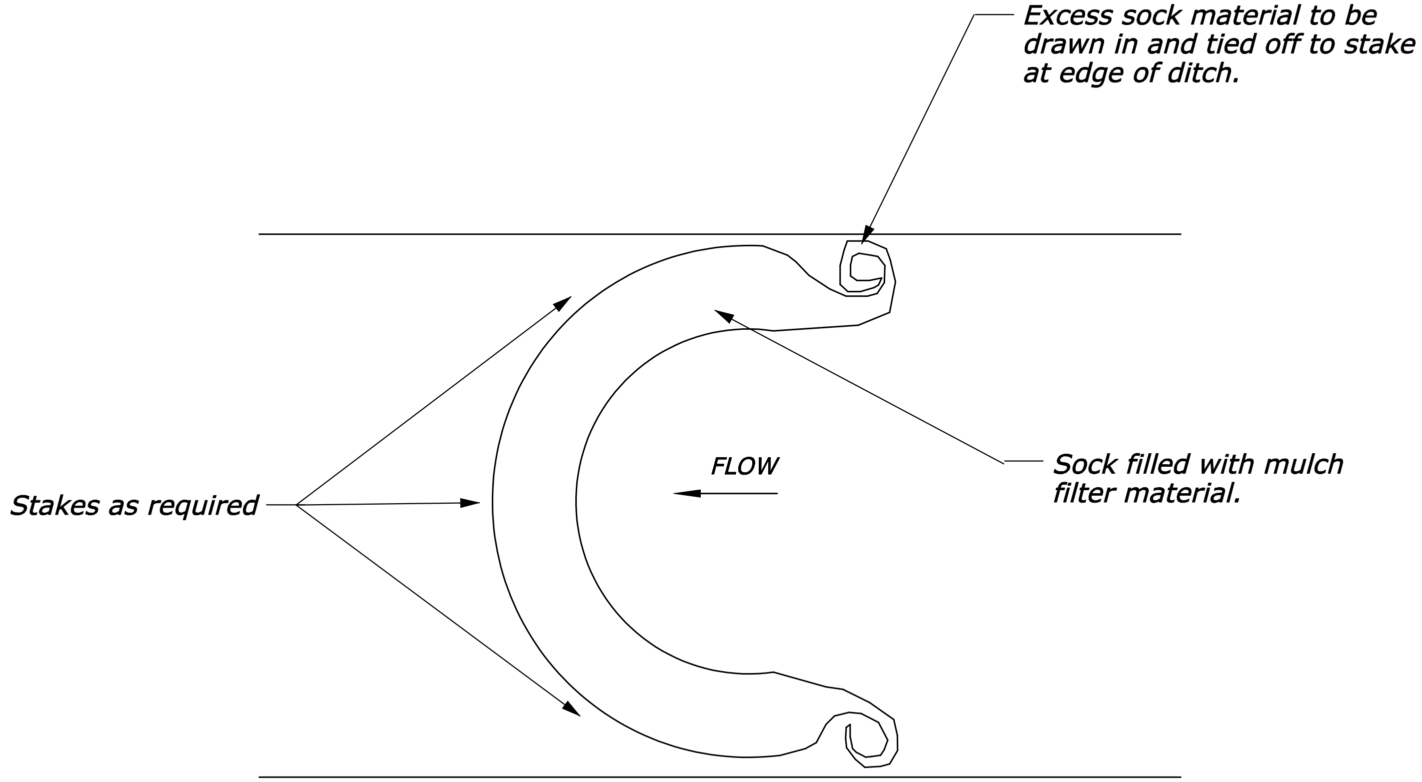
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

DETOUR SIGN LEGEND

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	S1



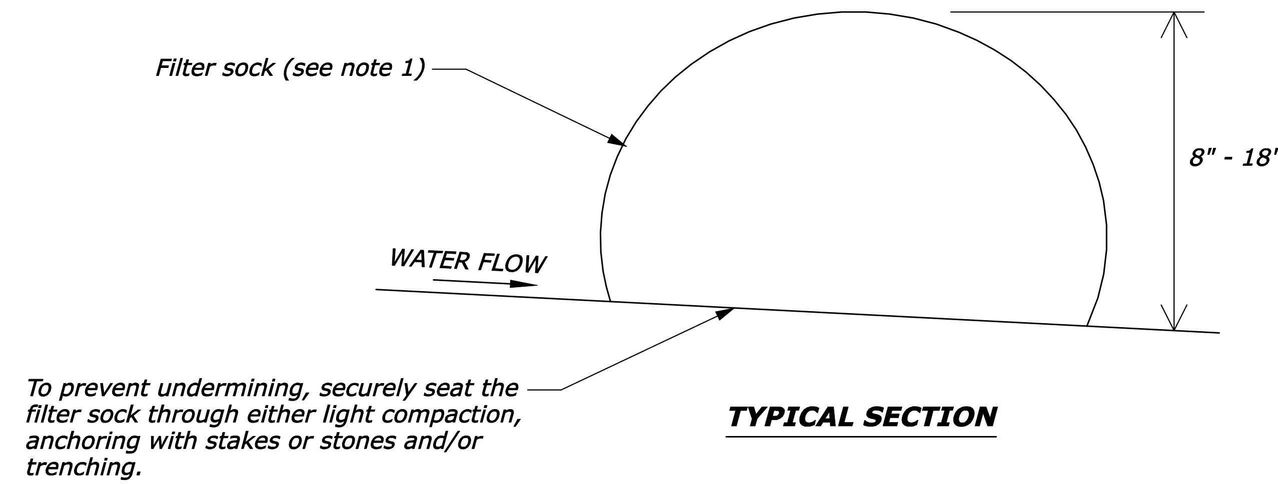
USED AS A CHECK DAM

DITCH GRADE (G) *	CHECK DAM SPACING(S)	
	12" HIGH	18" HIGH
2%	50 ft	75 ft
3%	33 ft	50 ft
4%	25 ft	40 ft
5%	20 ft	30 ft
6%	16 ft	25 ft

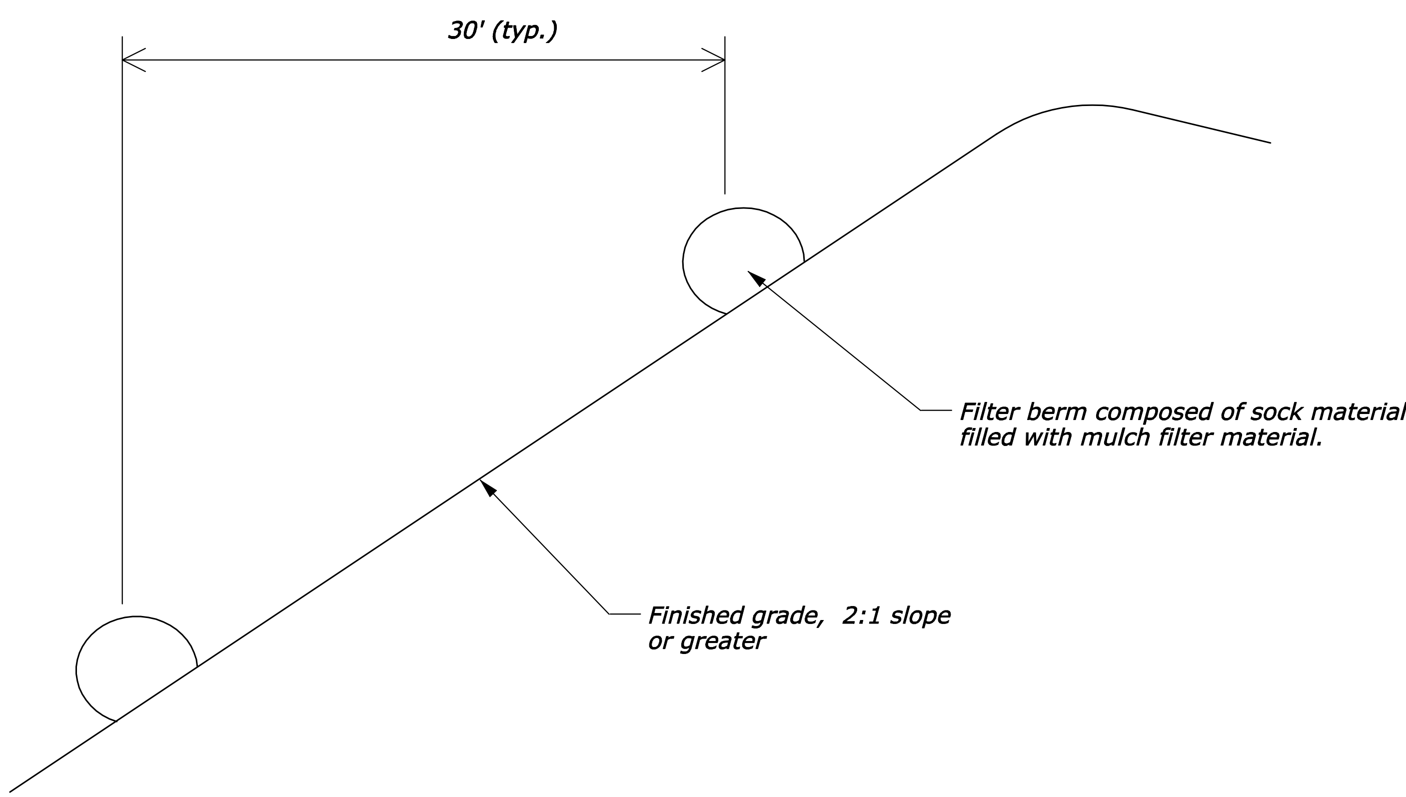
* do not use Check Dams below 2% or above 6% ditch grades

Notes:

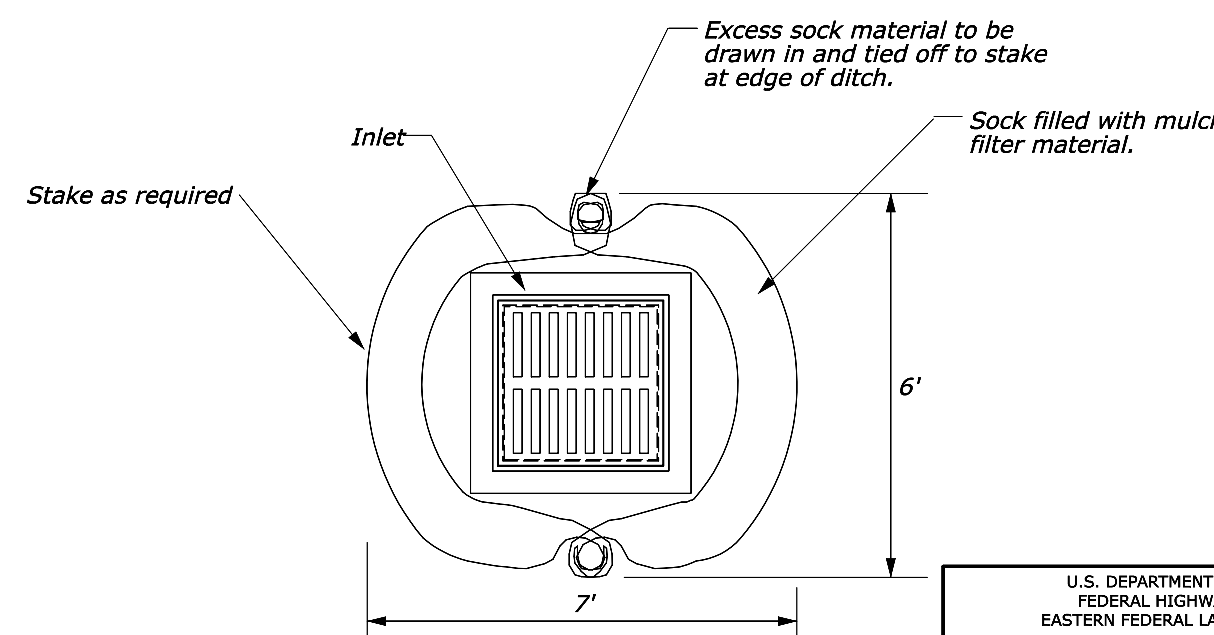
1. Provide sock and mulch materials in accordance with Section 157.
2. Maintain mulch filter berm in a functional condition at all times, as directed by the CO.
3. Remove sediment at the base of the berm when it has reached 1/3 of the exposed height of the berm, or as directed by the CO.
4. Removee the mulch filter berm when no longer required, as directed by the CO.



TYPICAL SECTION



USED FOR SLOPE PROTECTION



USED AS INLET PROTECTION

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
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EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

FILTER BERM

DETAIL APPROVED FOR USE

REVISED: 04/07 07/07

DETAIL E157-04

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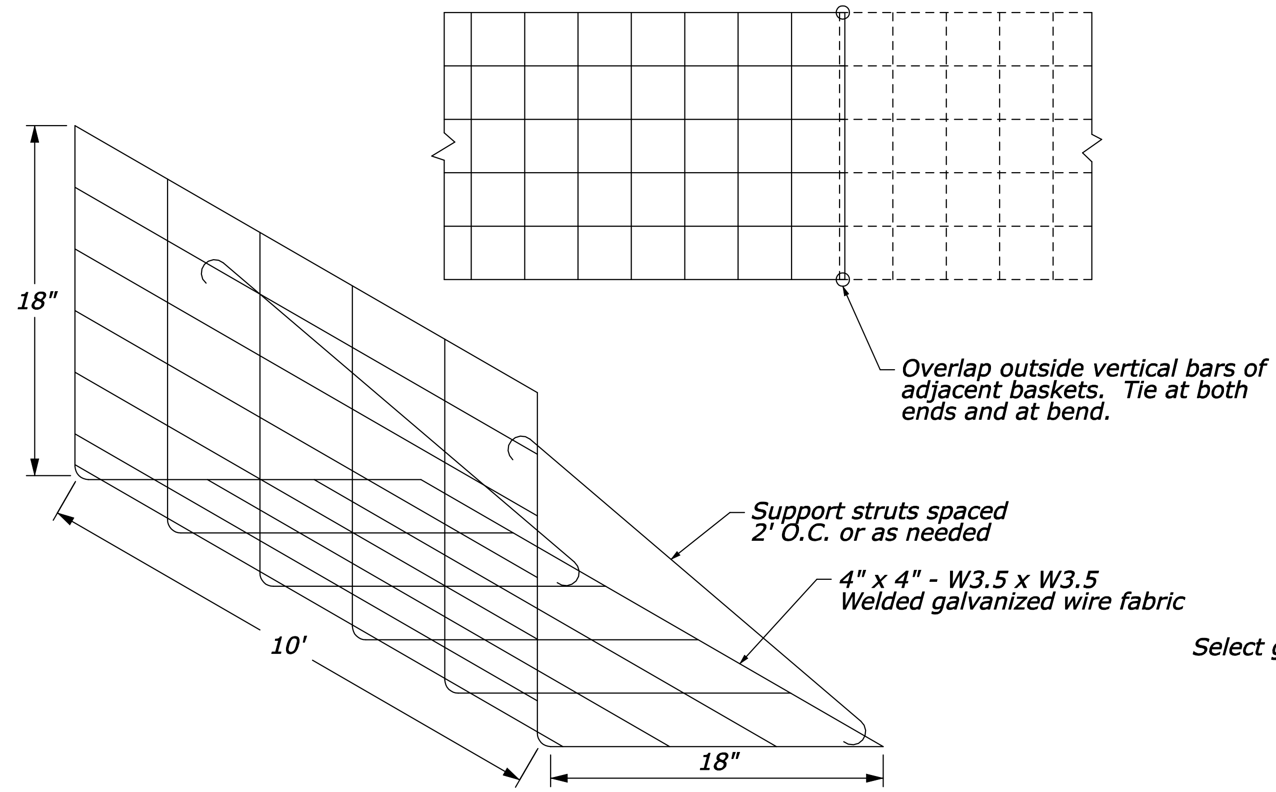
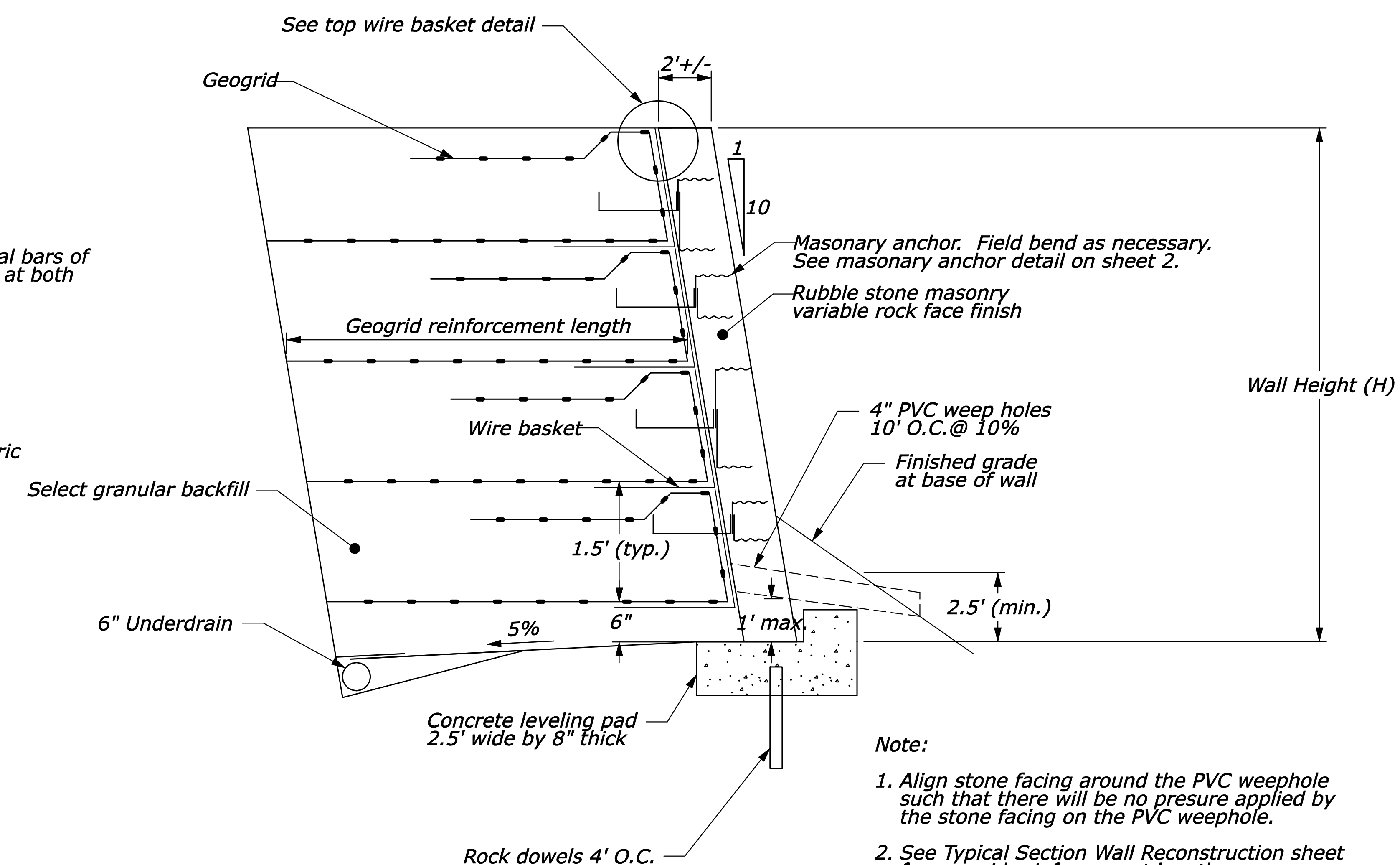
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	S2



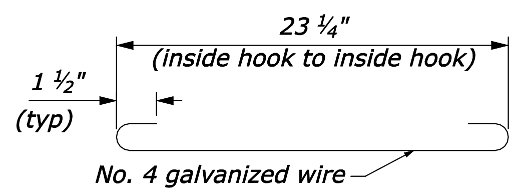
WIRE BASKET DETAIL



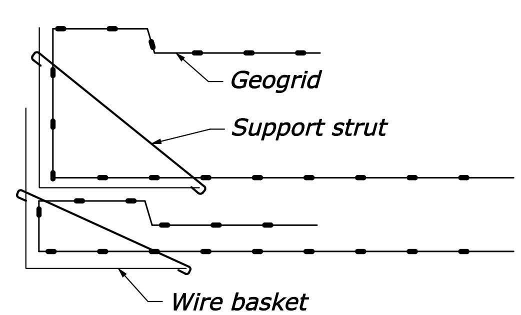
Note:

1. Align stone facing around the PVC weephole such that there will be no presure applied by the stone facing on the PVC weephole.
2. See Typical Section Wall Reconstruction sheet for geogrid reinforcement length.

TYPICAL WALL SECTION



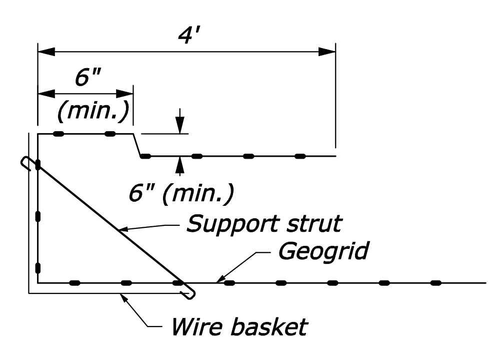
SUPPORT STRUT DETAIL



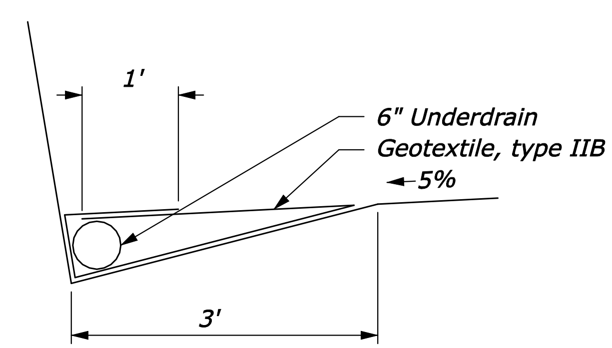
Notes:

1. Set topmost wire basket inside wire basket below.
2. Adjust height to follow grade of top of wall.

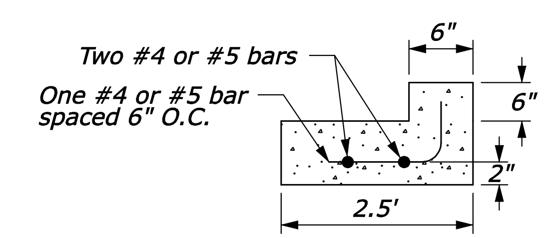
TOP WIRE BASKET DETAIL



WIRE BASKET DETAIL



UNDERDRAIN DETAIL



LEVELING PAD DETAIL

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

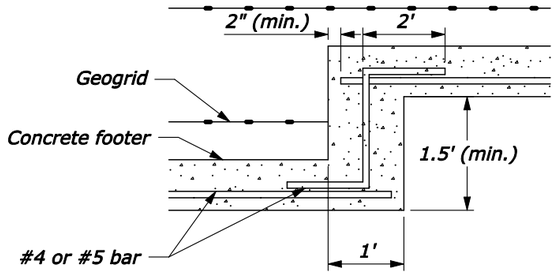
U.S. CUSTOMARY DETAIL

MECHANICALLY STABILIZED EARTH WALL WITH MASONRY FACE FINISH

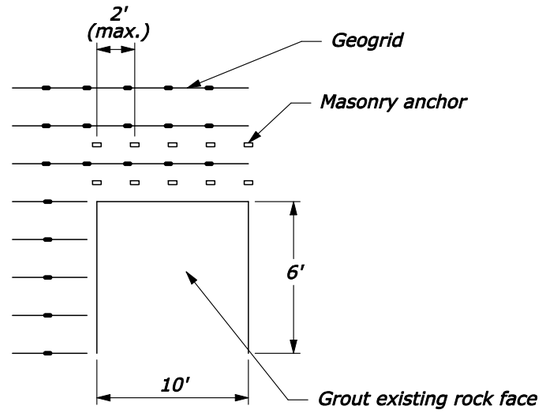
SHEET 1 OF 2

DETAIL APPROVED FOR USE	DETAIL
REVISED:	E255-A

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	S3



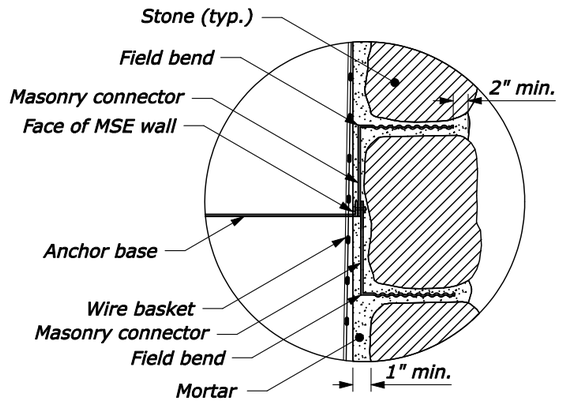
FOOTER DEPTH TRANSITION DETAIL



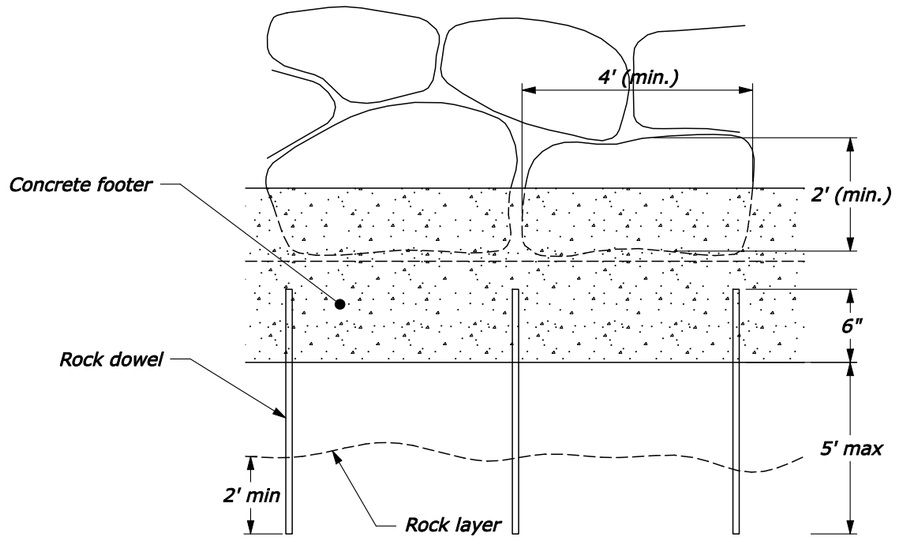
MSE WALL TAPER

Notes:

1. Vary location of tapers to fit into existing wall
2. 2' spacing applies only to the first two rows of anchors above the existing rock face. Place all other anchors on 3' spacing.
3. Minimum geogrid embedment length in the taper sections is 10'



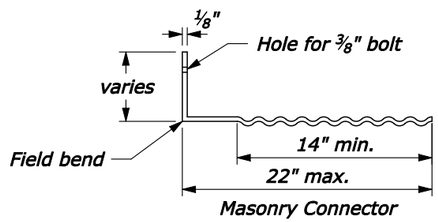
STONE MASONRY DETAIL

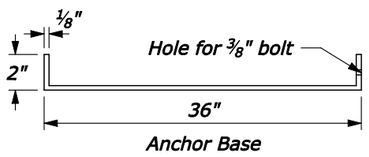


BOTTOM STONE COURSE DETAIL

Notes:

1. Establish bottom of footer on competent material with a minimum capacity of 4.0 ksf.
2. Provide bottom course of stones with minimum dimensions of 4' long by 2' high.

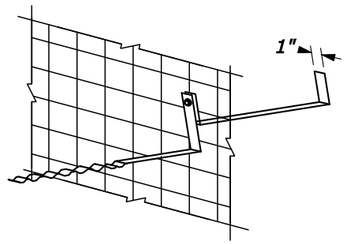




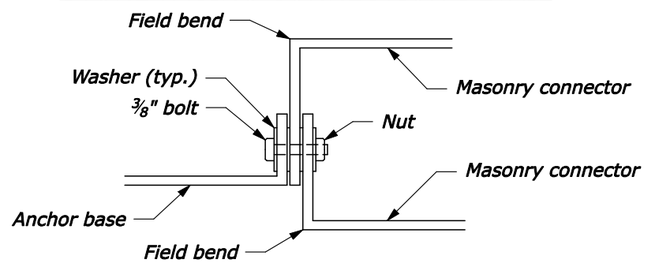
MASONRY ANCHOR DETAIL

Notes:

1. Optional masonry anchor detail. Contractor may submit alternate anchor detail for approval of the CO.
2. Place anchor bases at 3' O.C. in each row of wire baskets.
3. Field bend masonry connector to fit joint pattern of stone masonry face.



STONE FACING CONNECTION DETAIL



ANCHOR CONNECTION DETAIL

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

MECHANICALLY STABILIZED EARTH WALL WITH MASONRY FACE FINISH

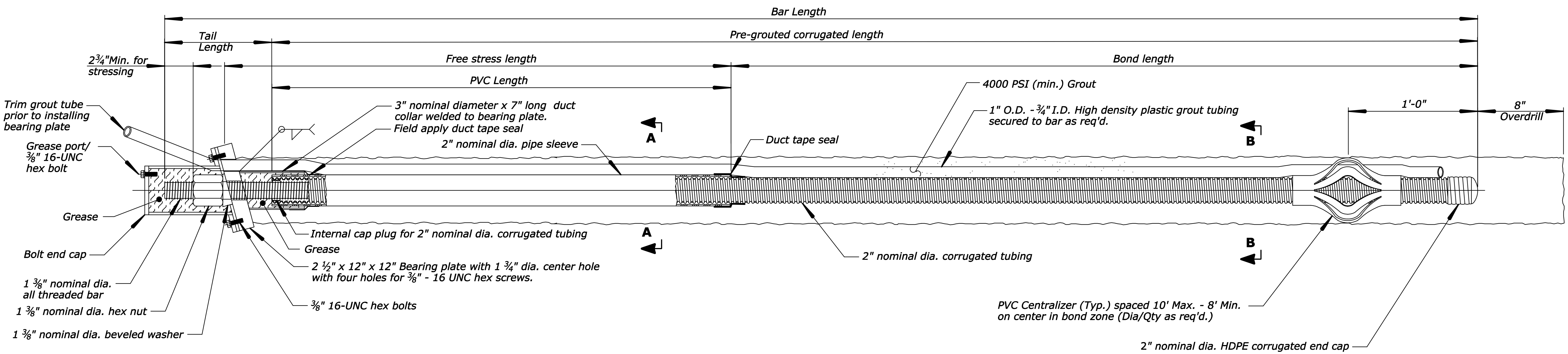
SHEET 2 OF 2

DETAIL APPROVED FOR USE

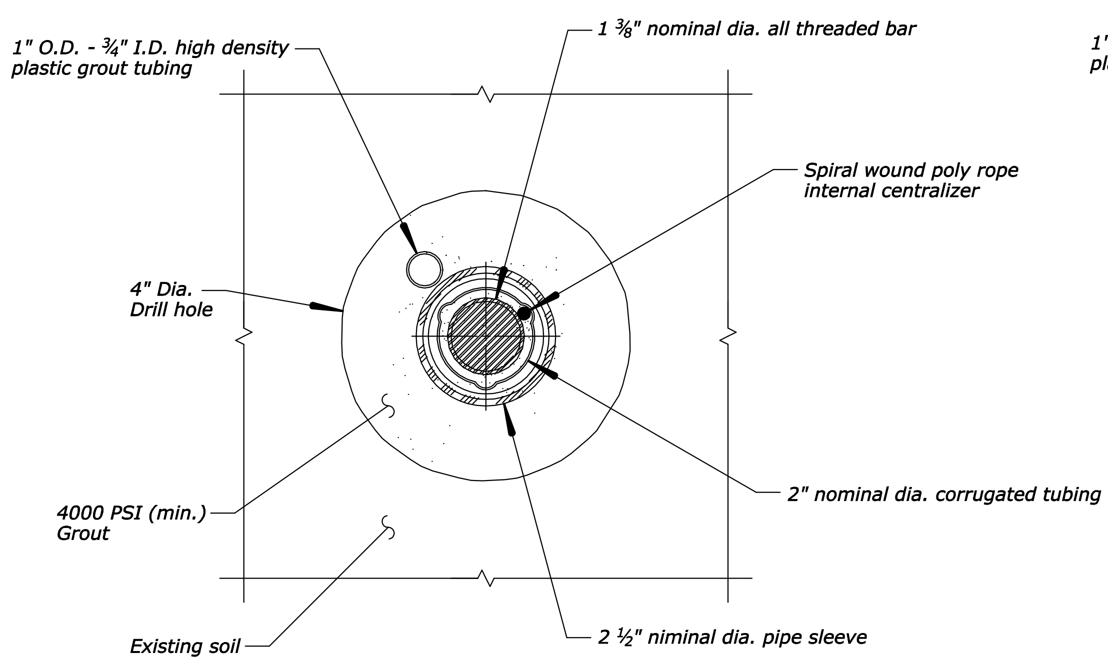
REVISED:

DETAIL E255-A

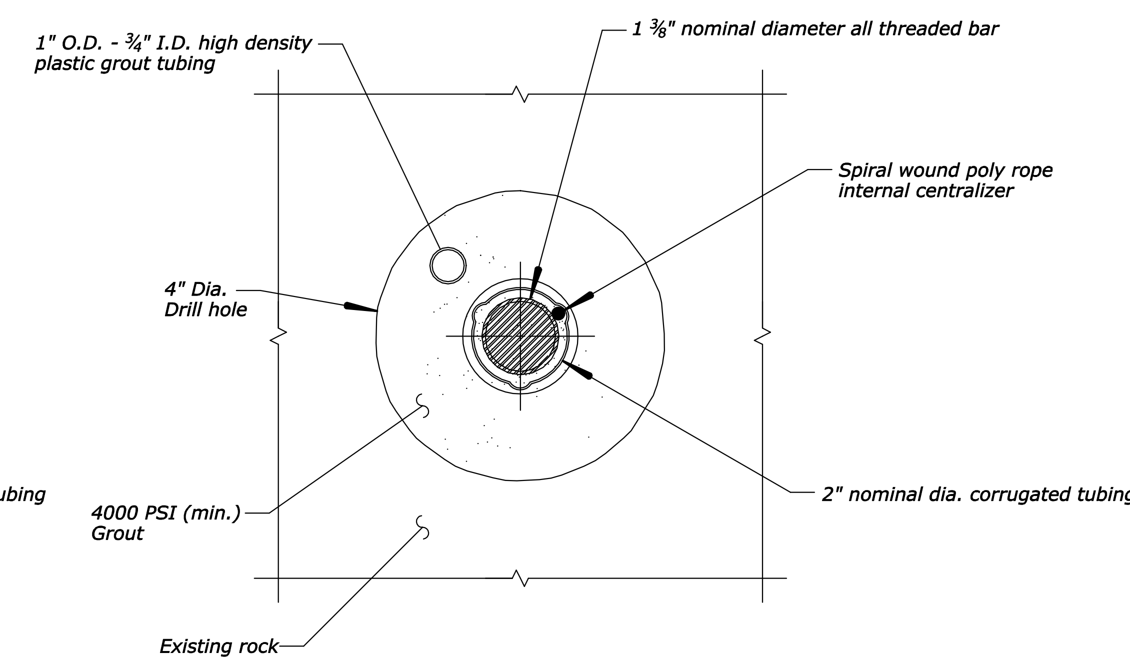
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	S4



1⅜" DIA. ALL-THREAD-BAR ANCHOR



SECTION A-A



SECTION B-B

Notes:

1. Furnish bolt end caps with an anodized or baked on enamel finish, black in color. Galvanize all other metal components in accordance with Subsection 722.03.
2. At the option of the contractor, an approved alternate rock bolt design with a design capacity of 50 kips and that meets Section 260 may be used.
3. Lock the anchors at a maximum load of 5 kips or less that avoids damaging the mortared stone wall facing. Obtain CO approval for higher anchor locking loads.

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

ROCK BOLT

DETAIL APPROVED FOR USE
REVISED:

DETAIL E260-A

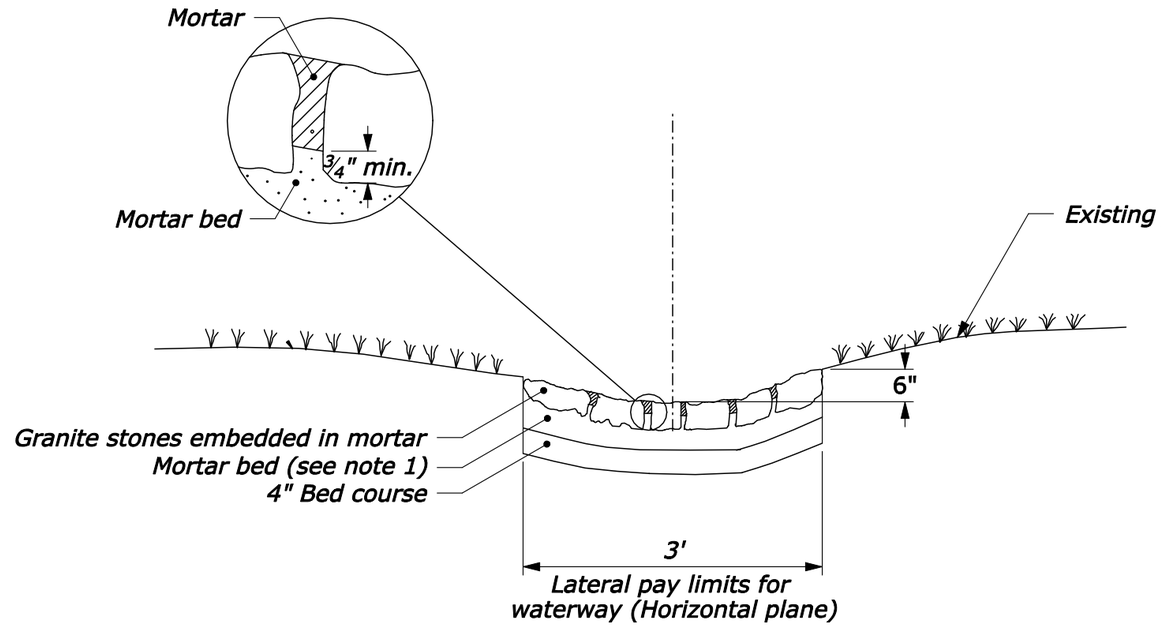
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	S5

Notes:

1. *Construct the mortared bed to a minimum depth of 4 inches prior to placement of the pavement stones. Embed the granite pavement stones in the mortar a minimum of 3/4 inches. After the mortar has taken its initial set, place mortar in the joints.*

2. *Provide granite cobble pavement stones that match the appearance of the stones in the existing paved ditches in the vicinity.*

3. *Before constructing paved waterways submit a test panel in accordance with the special contract requirements.*



NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

PAVED WATERWAY TYPE 2

DETAIL APPROVED FOR USE	DETAIL
REVISED:	E608-A

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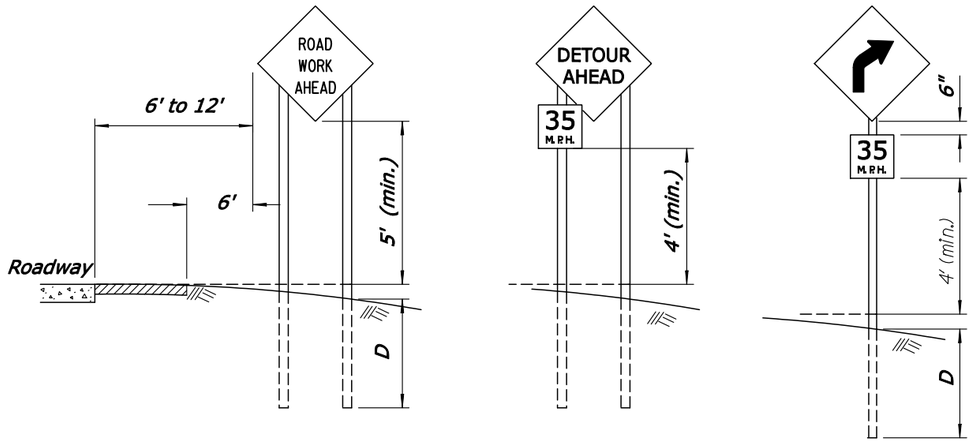
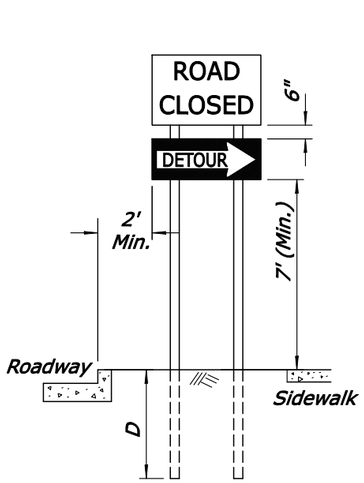
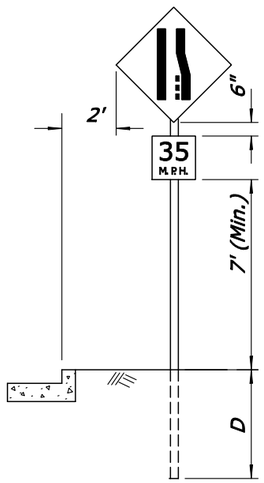
NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 43953	NE	NC	PRA-BRLI 2P16 SLIDE	S6

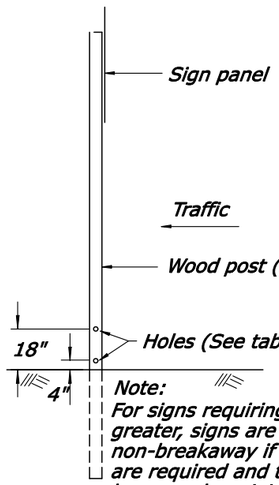


RURAL AREA



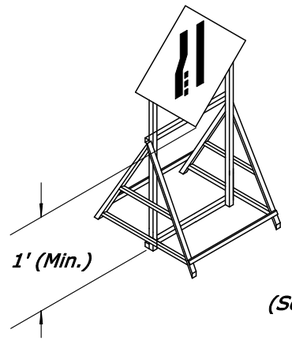


URBAN AREA

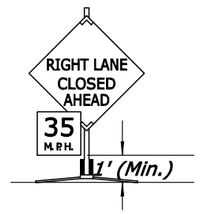


Note:
For signs requiring 6"x6" posts and greater, signs are considered to be non-breakaway if multiple posts are required and the posts cannot be spaced a minimum of 7 feet apart.

BREAKAWAY SUPPORT DETAIL
(FIXED SIGNS - 4" x 6" AND GREATER POSTS)



(See note 5)



PORTABLE SIGNS
(See note 4)

Notes:

1. *Wood posts are 4"x 4" unless otherwise indicated.*
2. *Mount signs that are wider than 3-feet or larger than 10 square feet on double posts.*
3. *All lumber dimensions are nominal.*
4. *The Contractor may submit alternate details for portable signs, however, sign mounts hold the sign face in a vertical plane. Portable signs may be mounted lower than fixed signs when approved by the CO. Ensure all portable sign supports meet the requirements of NCHRP-350 for crashworthiness.*
5. *When parking is permitted within 200 feet of the sign, mount the sign a minimum of 7 feet above the pavement surface.*
6. *When approved by the CO and the Utility Company, utility poles may be used for sign mounting.*
7. *For posts greater than 4" x 4" see the Breakaway Support Detail. If breakaway design cannot be used, due to post spacing, the sign should be placed outside the clearzone or be shielded by barrier. Do not place holes in posts of non-breakaway signs*

FIXED ROADWAY SIGNS

Post size	D	Hole Dia.	Maximum Sign Area - Sq. ft.			
			1 Post	2 Posts	3 Posts	4 Posts
4" x 4"	3'	None Req'd	10	20		
4" x 6"	4'	1.5"		35	50	70
6" x 6"	4'	2"		50	75	100
6" x 8"	5'	3"		85	125	165

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

CONSTRUCTION TRAFFIC CONTROL SIGN MOUNTING

DETAIL APPROVED FOR USE 02/2007

REVISED: 02/07 06/07 02/08

DETAIL
E635-01

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NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 ~~43953~~	NE	NC	PRA-BRLI 2P16 SLIDE	S7

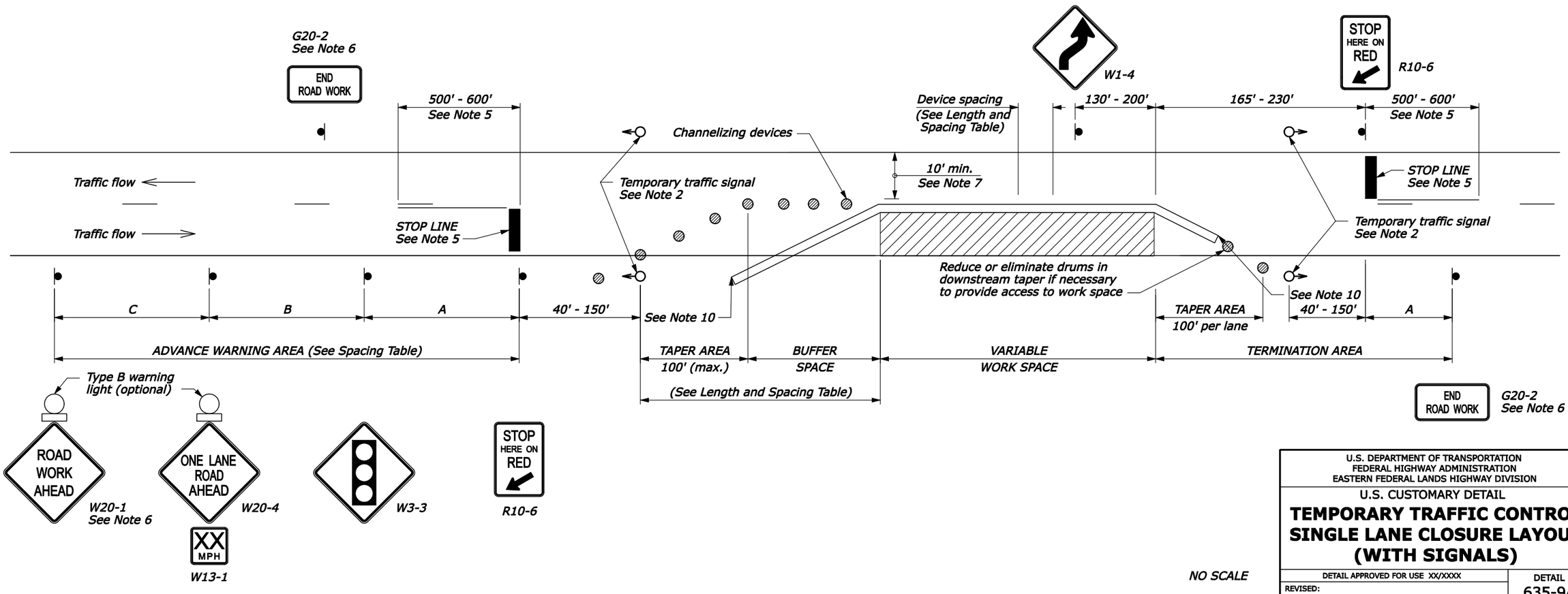
LENGTH AND SPACING TABLE				
APPROACH SPEED*	LENGTH OF BUFFER SPACE	CHANNELIZING DEVICE		
		TAPER AREA	BUFFER SPACE	WORK SPACE
MPH	FEET	SPACING IN FEET		
25	150	20	50	50
30	200	20	60	60
35	250	20	70	70
40	300	20	80	80
45	360	20	90	90
50	425	20	100	100
55	500	20	110	110

* Approach speed based on the regulatory posted speed, not the advisory speed.

SIGN SPACING TABLE			
ROAD TYPE	DISTANCE BETWEEN SIGNS IN FEET		
	A	B	C
Urban 40 MPH and less	100	100	100
Urban 45 MPH and greater	350	350	350
Rural	500	500	500
Expressway/Freeway	1000	1500	2650

NOTE:

1. Advance Warning Area signs are shown for one direction of travel only. Place devices for opposite direction of travel.
2. A single signal installation is acceptable, on the right-hand side of the road, if it has two signal faces that are at least 8 feet apart and meets the other requirements of Part 4 of the MUTCD.
3. Install and operate temporary traffic control signals in accordance with the provisions of the MUTCD, Part 4. Signal timing shall be established by a qualified engineer. When the signal is changed to the flashing mode either manually or automatically, ensure red signal indications are flashed to both approaches.
4. Final location and spacing of signs and devices may be changed to fit field conditions as approved by the CO. If signals are moved, revised signal timing must be determined by a qualified engineer.
5. If the roadway surface is paved, install stop lines that comply with Section 3B.16 of the MUTCD. Remove existing conflicting pavement markings and raised markers between the work space and the stop line. Add no-passing lines in advance of the stop line.
6. If lane closure is completely within the project limits, eliminate the "ROAD WORK AHEAD" (W20-1) and "END ROAD WORK" (G20-2) signs.
7. For project specific minimum width, refer to Special Contract Requirements, Section 156.
8. Do not allow equipment, materials, or vehicles to be parked or stored in the buffer space.
9. If signs will be in place more than 72 consecutive hours, use ground-mounted post.
10. Place barrier according to the Roadside Design Guide published by the American Association of State Highway and Transportation Officials (AASHTO). Terminate barrier ends outside the clear zone or protect the ends of the barrier with a crash cushion.



NO SCALE

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FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION

U.S. CUSTOMARY DETAIL

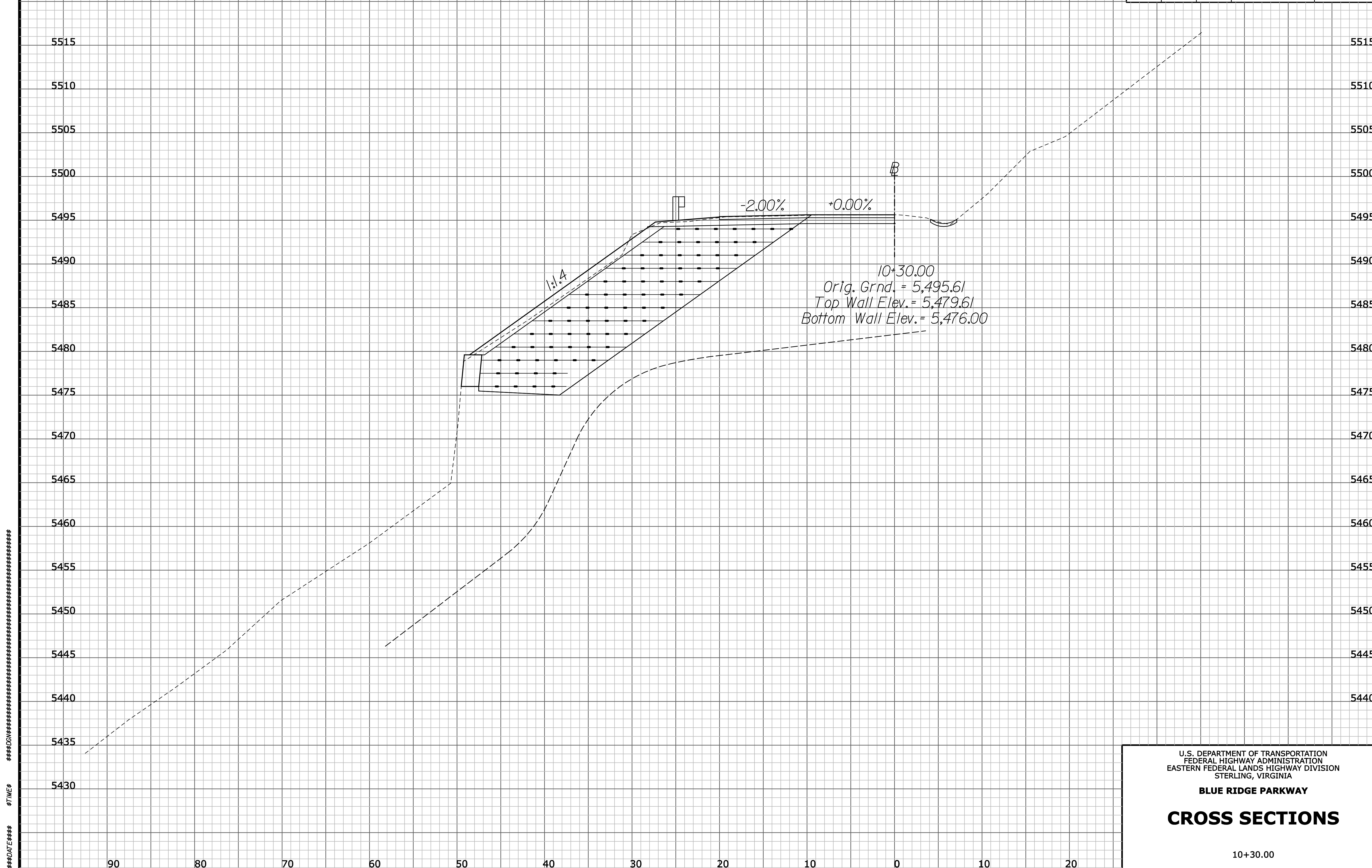
TEMPORARY TRAFFIC CONTROL SINGLE LANE CLOSURE LAYOUT (WITH SIGNALS)

DETAIL APPROVED FOR USE XX/XXXX

REVISED:

DETAIL 635-9A

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	T1



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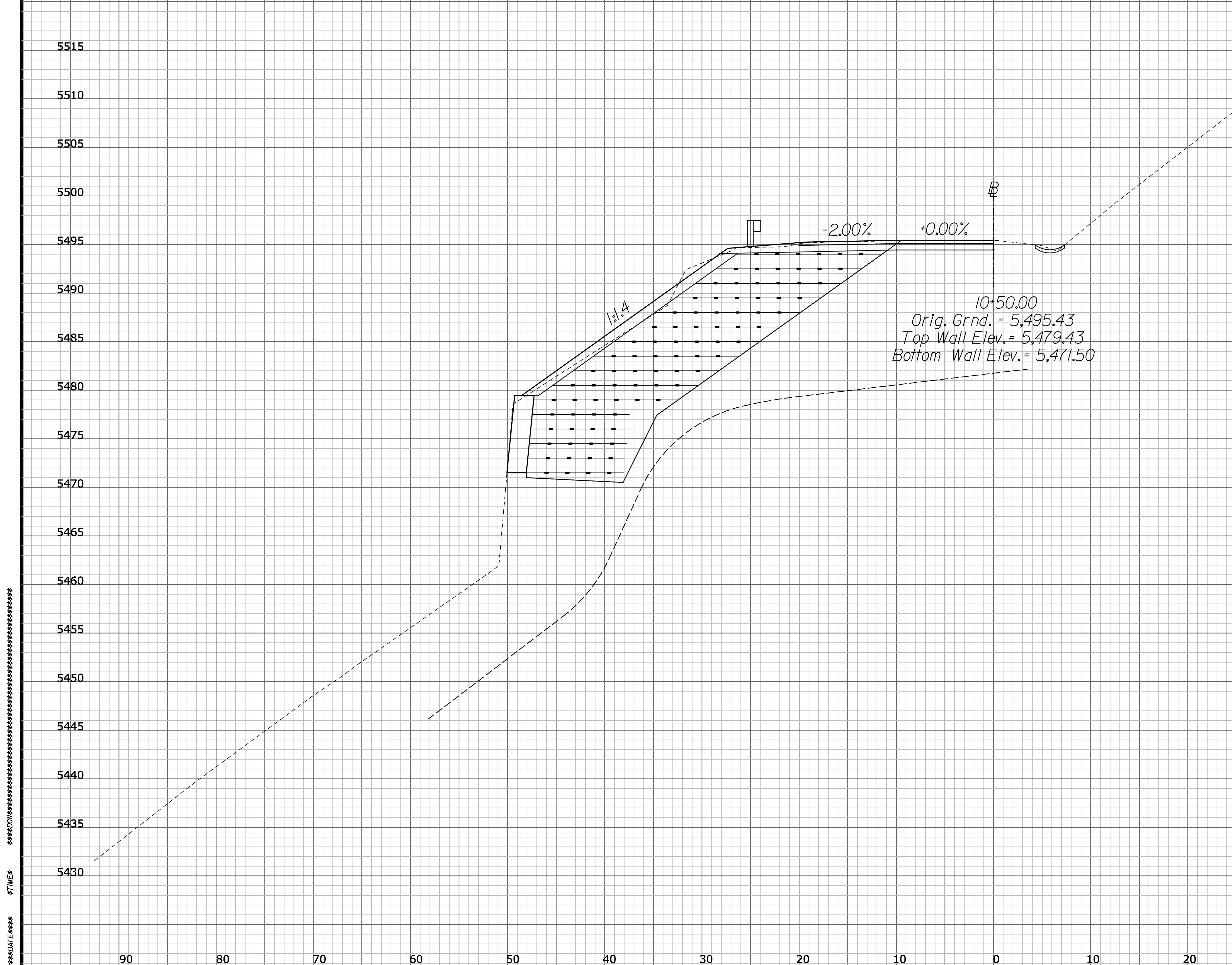
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

CROSS SECTIONS

10+30.00

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	T2



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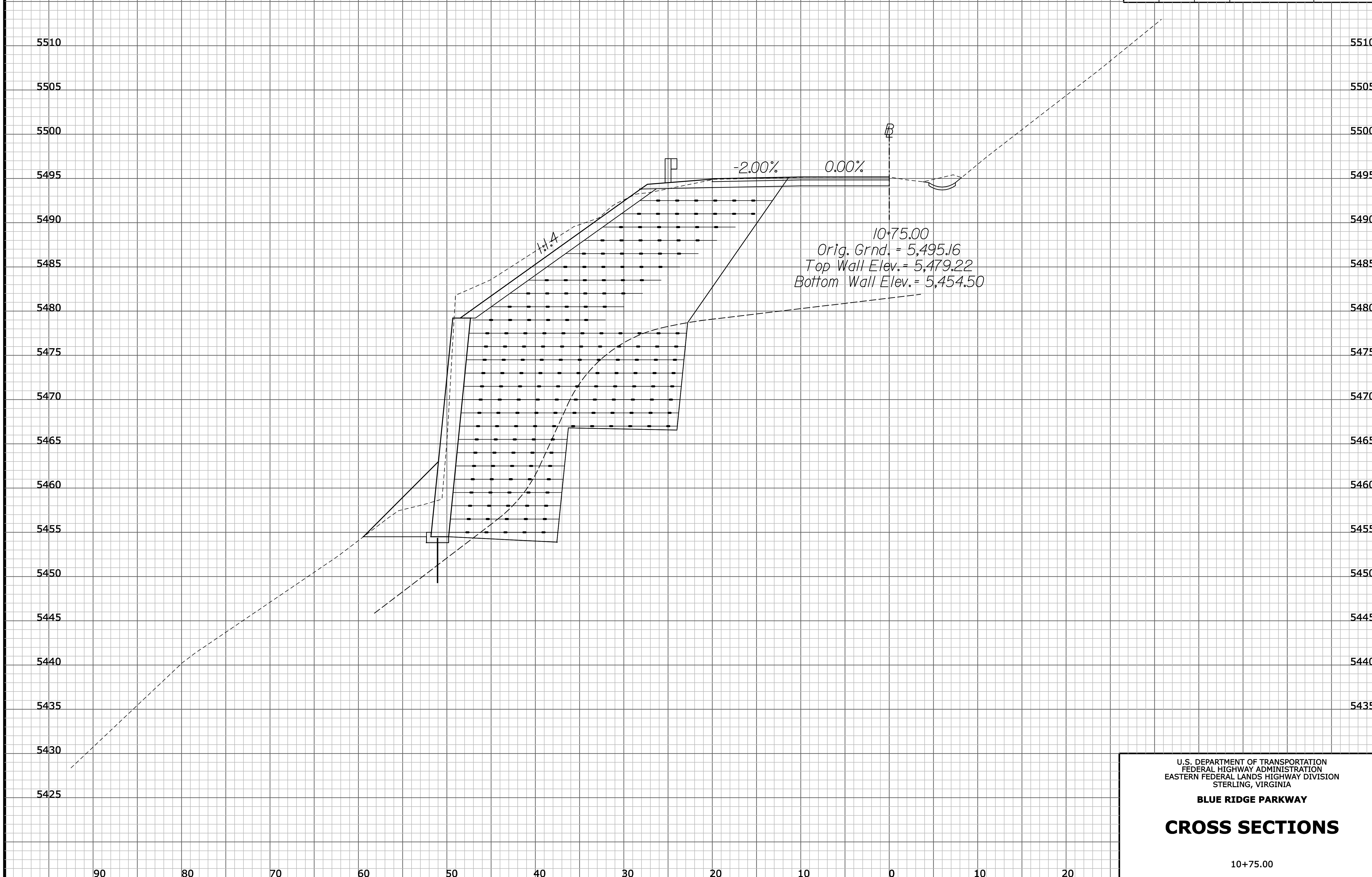
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

CROSS SECTIONS

10+50.00

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	T3



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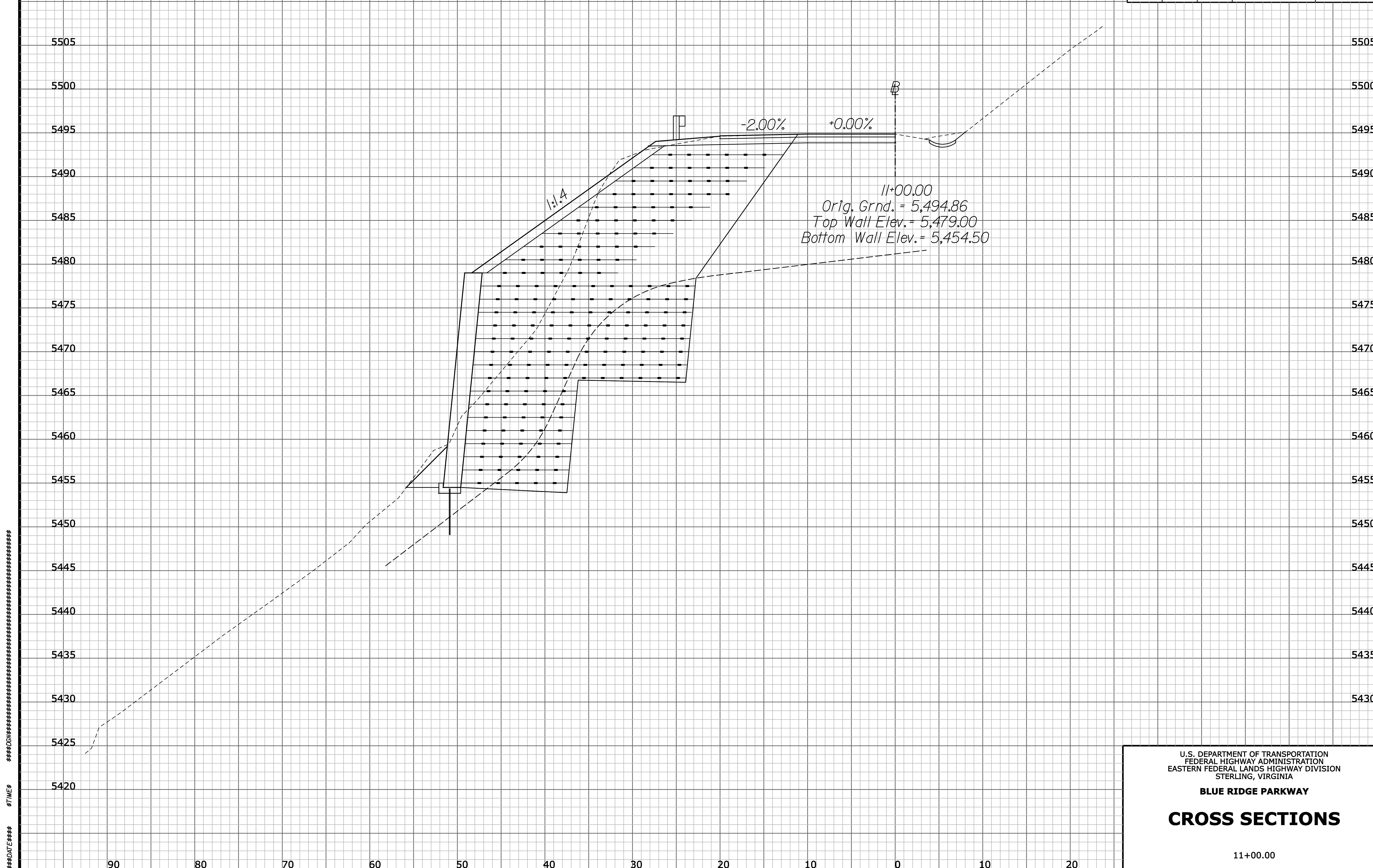
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

CROSS SECTIONS

10+75.00

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	T4



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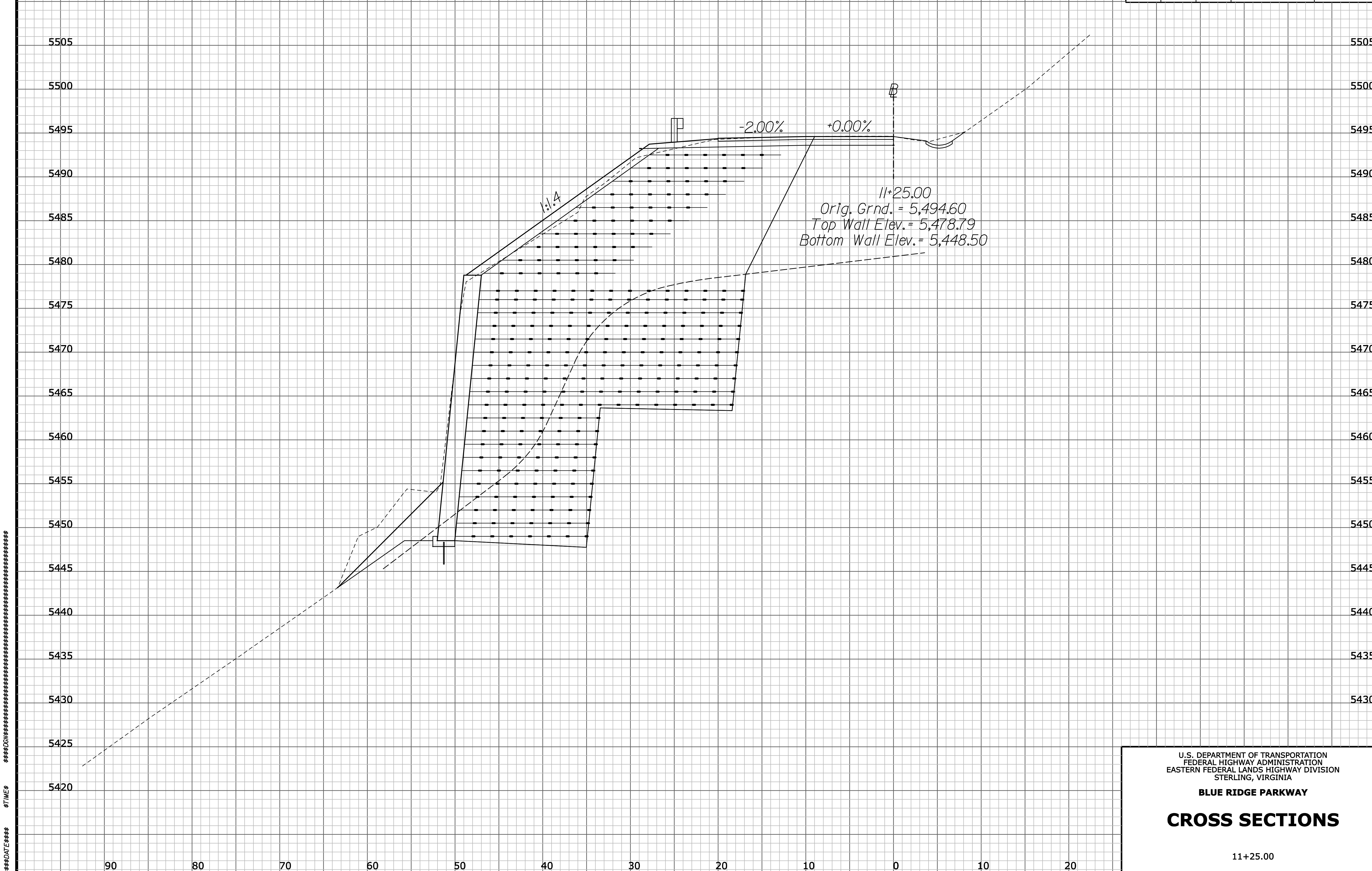
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

CROSS SECTIONS

11+00.00

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	T5



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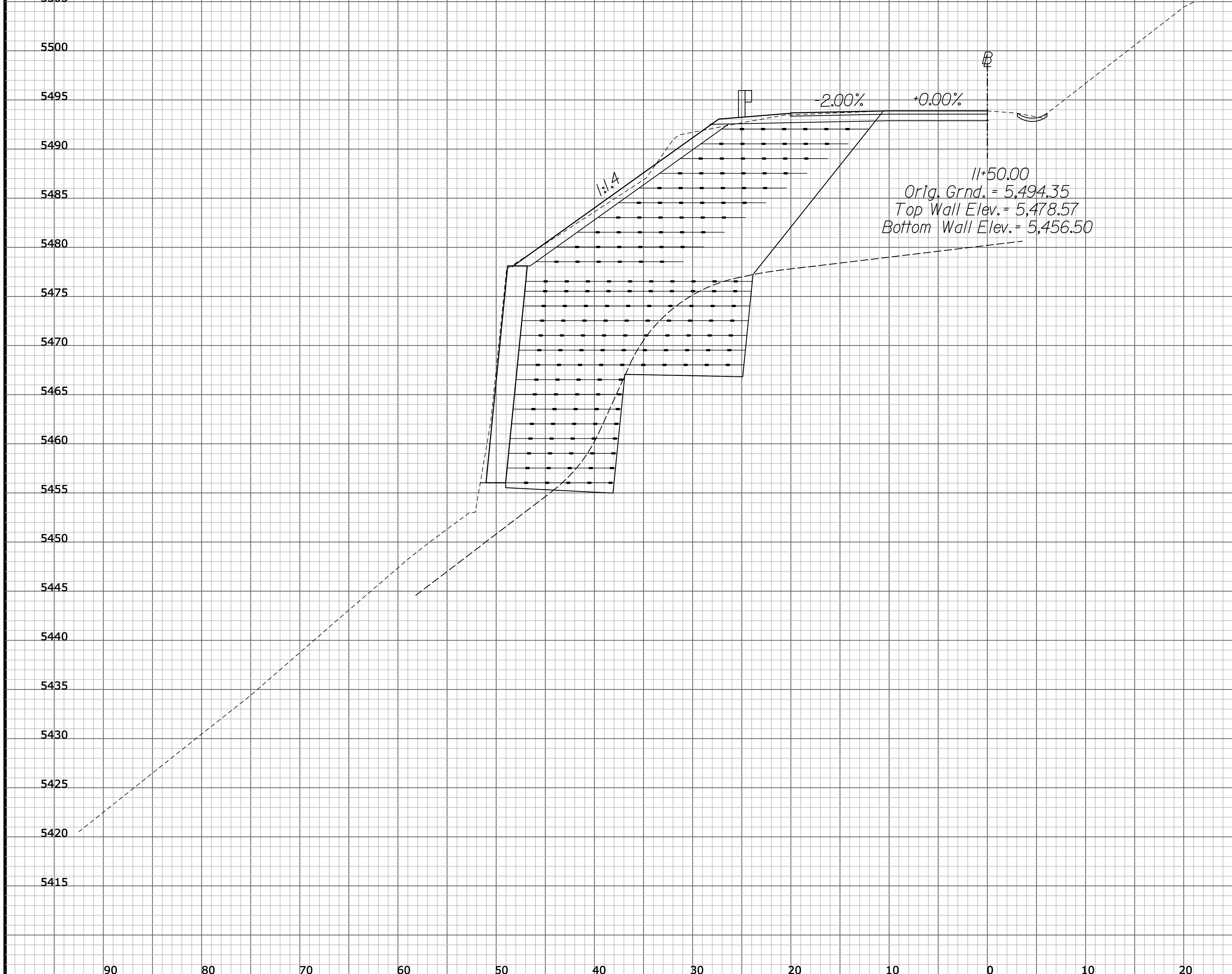
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

CROSS SECTIONS

11+25.00

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	T6



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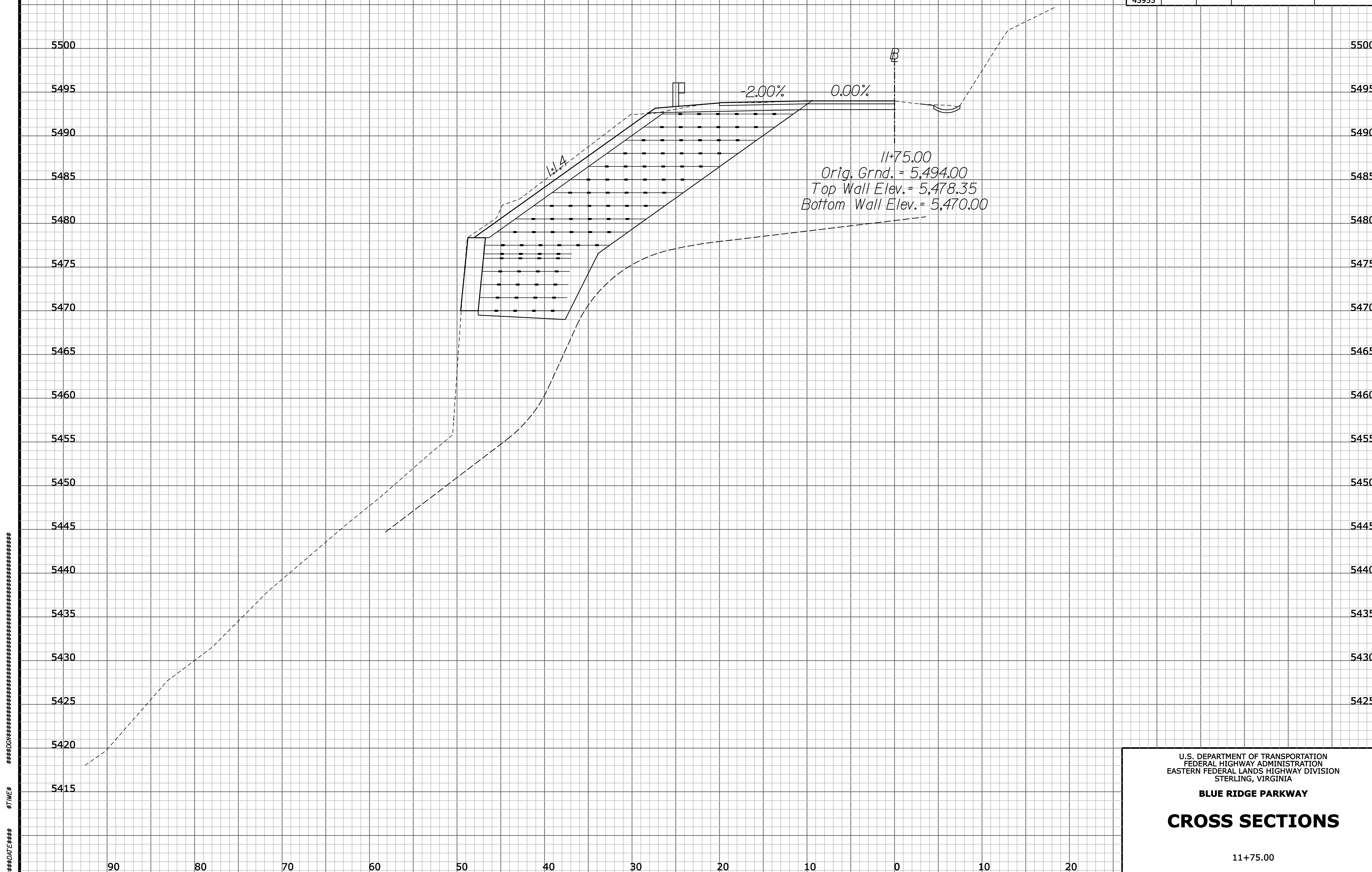
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

CROSS SECTIONS

11+50.00

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	T7



U.S. DEPARTMENT OF TRANSPORTATION
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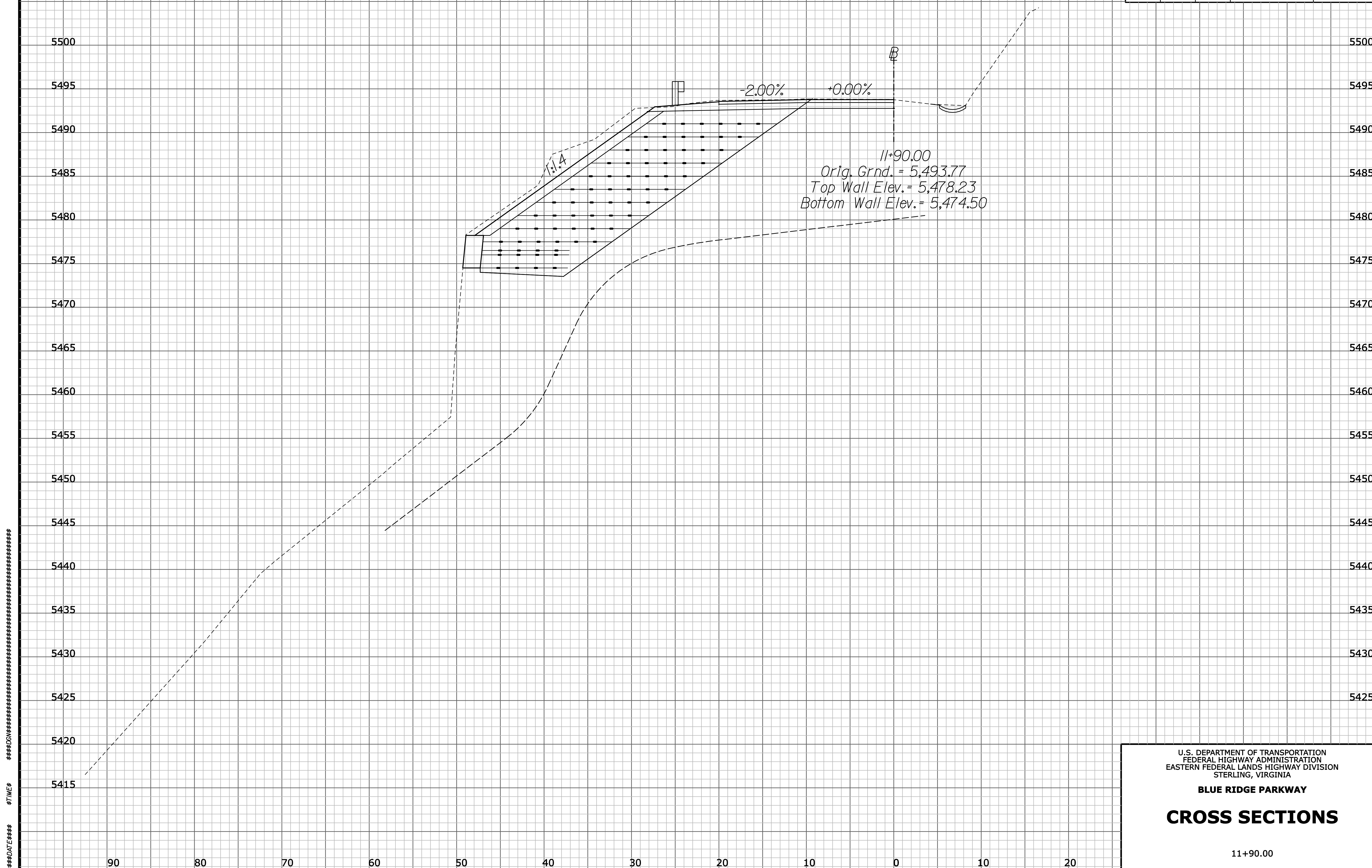
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

CROSS SECTIONS

11+75.00

NPS NO.	REG	STATE	PROJECT	SHEET NO.
601 / 43953	NE	NC	PRA-BRLI 2P16 SLIDE	T8



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
EASTERN FEDERAL LANDS HIGHWAY DIVISION
STERLING, VIRGINIA

BLUE RIDGE PARKWAY

CROSS SECTIONS

11+90.00